

SL 9000 J Series

Console Operator's Manual

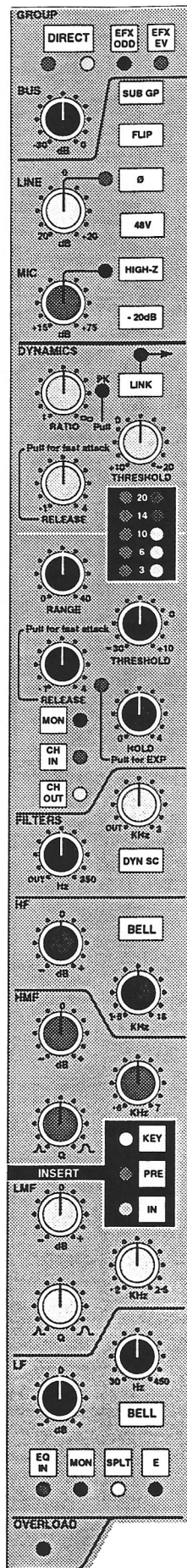
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On the following pages you will find a full alphabetical Index. We have tried to make this Index as comprehensive as possible because we believe that, once you have become accustomed to the basic features of the SL 9000 J Series Console, you will only need to use this manual as a reference volume.

Entries shown in **Bold** denote front panel switches and controls.

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Input/Output Module

The input/output module bears a strong resemblance to the SL4000G module, but with a number of enhancements.

The differences are briefly as follows:

The channel input stage is similar to G Series. The **MIC** gain is a continuously variable control (from +15dB to +75dB) with a 20dB pad switch. The Mic input can also be switched to high impedance using the **HIGH-Z** switch, allowing the Mic input to be used for line level signals.

The Multitrack **BUS** trim control, which on SL4000/6000/8000 Series consoles is adjacent to the Group/Tape switches near the bottom of the module, is also located in this area.

The SL 9000J Series Dynamics section is based on the classic G Series circuits, with the addition of a Peak detect option on the Compressor (selected by pulling the **RATIO** switch up) and a **HOLD** control for the Gate. The Expander/Gate section defaults to Gate, with Expand selected by pulling the **HOLD** control. As with G Series, the Dynamics section can be keyed from the Monitor path by selecting **MON** and either **CH IN** or **CH OUT**. It can also be keyed from the Insert Return by selecting **KEY** and **IN** for the channel insert point.

The Equaliser is a four band parametric, with variable Q on the mid bands and shelving/bell high and low bands. The normal curves of the equaliser are based on the G Series equaliser. The mid bands are constant Q, so the bandwidth increases as the gain is decreased. LF and HF **BELL** switches are provided as opposed to the LMF and HMF range shift switches found on G Series EQ.

The **E** switch selects an alternative set of EQ characteristics, based on the classic '242' E Series card. The mid bands have a constant bandwidth, so Q increases as gain is increased; the HF band has a shallower slope than in 'normal' mode. The bell curves are identical to the normal ones, ie. without **E** selected.

The Equaliser can be switched to the Monitor path using the **MON** switch. **SPLT** places the filters at the channel input, just as in G Series.

The EQ **IN** switch is automated.

Control Room Monitoring System

Monitor Selection and Control

The large knob in the MONITOR LEVEL group of controls on the SL952 panel (see opposite) sets the level of the main control room monitors. The control room monitors are usually fed from the console's main outputs but alternative sources may be selected by the EXT 1 or EXT 2 buttons fitted in the MONITOR MODE group of switches. These buttons allows any one of the sources on the two 11-way EXTERNAL MONITOR selectors (see over the page), to be monitored.

DIM – The DIM button dims both Main and Mini loudspeaker outputs to a level preset by the DIM LEVEL pot. The DIM circuit is automatically activated when any of the following buttons are pressed: LISTEN MIC, FOLDBACK A, B or C, SLS, Oscillator to MIX, ABCD or BUSSES 1-48.

CUT – Cuts whichever pair of monitors have been selected. Activated automatically by the SLATE button.

The four *main* monitor outputs can be muted individually with the LEFT, CENTRE, RIGHT and SURR Monitor Cut switches.

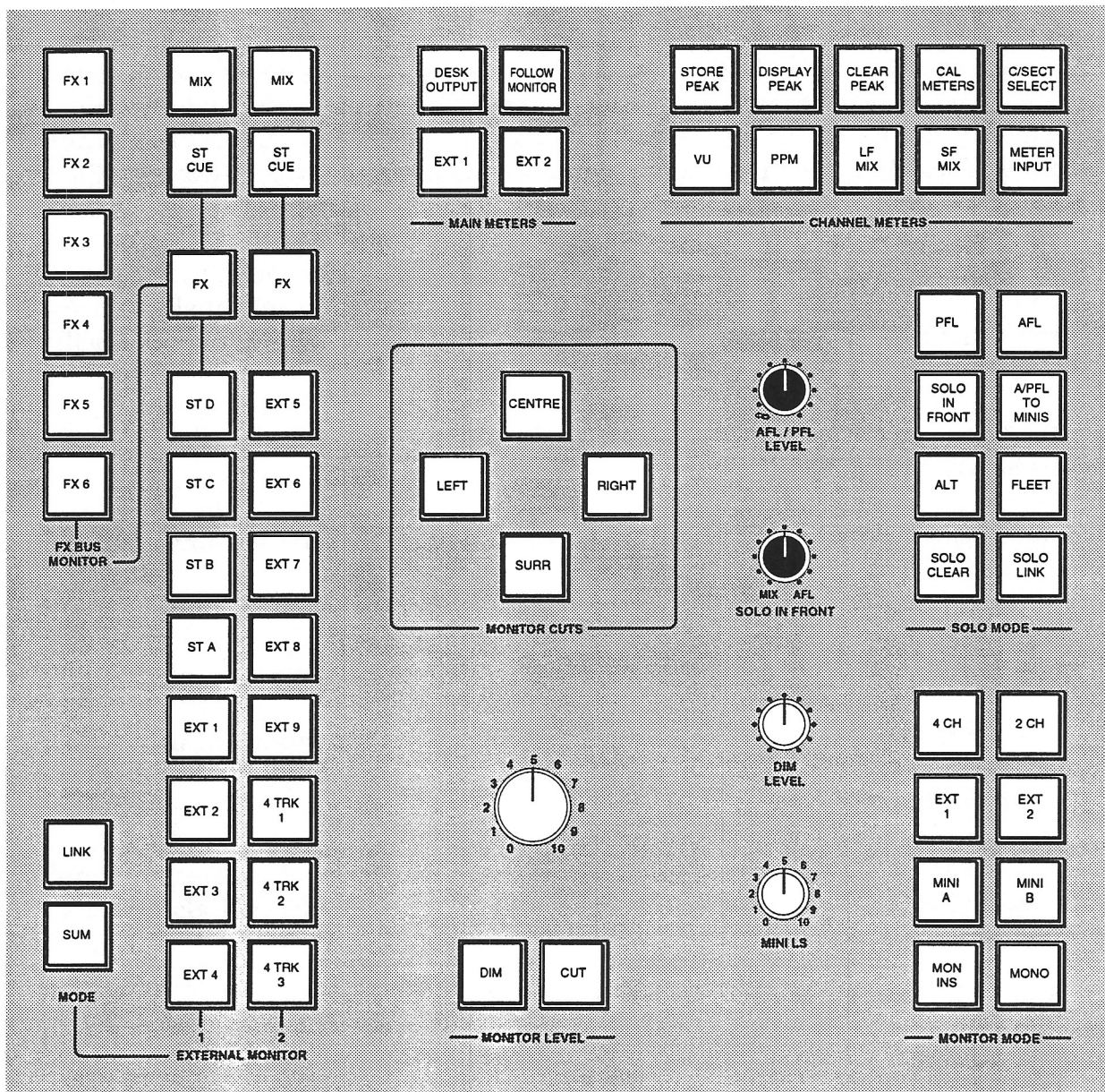
The rest of the MONITOR MODE group of switches act as follows:

2 CH – Selects only the Left and Right bus signals to the monitor outputs. If the console is fitted with the LCR pan option, 2 CH will also switch the channel pan pots to two channel pan mode.

4 CH – Feeds Left, Right, Centre and Surround signals to their respective monitor outputs. If the console is fitted with the LCR pan option, 4 CH will also switch the channel pan pots to LCR pan mode.

MONO – Feeds a mono sum of the main bus to Left and Right monitor outputs in 2 CH mode, or to Centre in 4 CH mode.

MINI A and MINI B – When selected, the monitor bus is fed to the corresponding Mini Loudspeaker output via the MINI LS pot.



External Source Selectors

The console has two external source selectors, each fed by eleven sources. EXT 1 is a 2-channel selector and EXT 2 is a 4-channel selector. The first three sources are common to both selectors - MIX (desk output), the ST(EREO) CUE bus and the output of the FX (mono auxiliary) bus pre-selector.

EXT 1 can also monitor the four stereo busses, ST A-D (post insert point), and four stereo external sources, EXT 1-4.

EXT 2 can monitor five stereo, EXT 5-9, and three four channel external sources, 4 TRK 1-3.

SUM allows sources to be summed together. This is particularly useful for generating complex foldback mixes or when stem mixing, as it allows the recorded stems to be monitored together with the current mix.

LINK links the two selectors together – selecting either one will light both EXT 1 and EXT 2 switches, and the two columns of source switches will intercancel.

SOLO/AFL/PFL

The console's default Solo mode is a destructive solo – soloing a channel cuts all other channels. The Large and Small Fader solo cut busses are normally separate but can be linked using the SOLO LINK switch.

AFL – When AFL is selected, pressing a channel solo switch routes the post pan signal, via the AFL bus and the AFL/PFL LEVEL control, to the monitor speakers. Note that, unlike on SL 4000 Series consoles, this signal is 'in-place' – that is it follows the position of the pan pot, even if the console is fitted with LCR panning.

PFL – When PFL is selected, pressing a channel solo switch routes a mono pre-fade signal, via the PFL bus and the AFL/PFL LEVEL control, to the monitor speakers. In 2 CH mode (see Page 5-9) this is routed to Left and Right speakers. In 4 CH mode it is routed to the Centre speaker.

A/PFL TO MINIS – Selection of this button routes the AFL or PFL signal to the MINI 'A' loudspeakers, leaving the desk output on the Main monitors. Note that the AFL/PFL LEVEL control has no effect in this mode; control the level on the MINI LS pot.

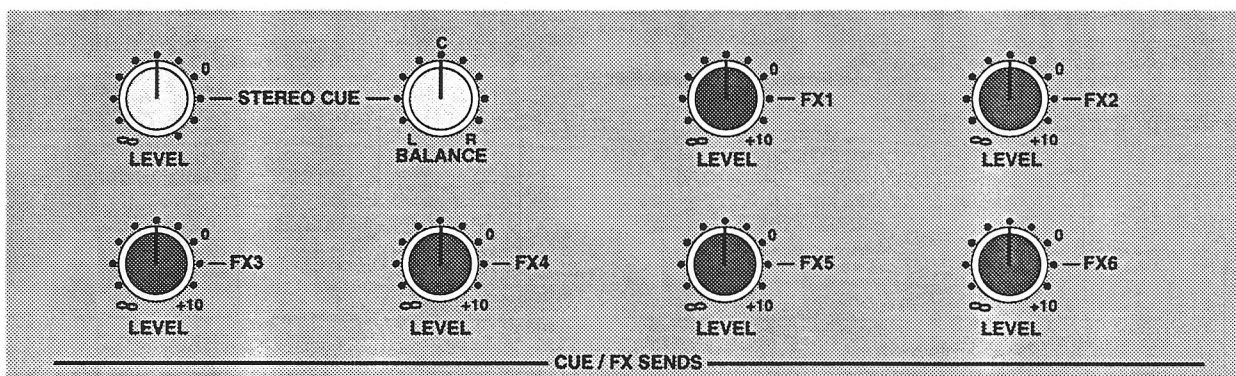
SOLO-IN-FRONT – With SOLO IN FRONT selected, pressing a channel solo switch routes a mix of the AFL signal and the desk output to the monitor outputs. The SOLO IN FRONT mix control adjusts the balance between AFL signal and desk output.

ALT – Selecting ALT makes the channel solo switches intercancel with each other, so that soloing one channel will clear any other solo switches.

FLEET – Selecting FLEET makes all channel solo switches momentary.

SOLO CLEAR – This turns off all channel and group solo switches whenever it is pressed. Note that centre section AFL switches (on Echo Returns, Foldback outputs etc.) are not cleared by this function, as these switches are mechanically latched.

Cue-FX Sends

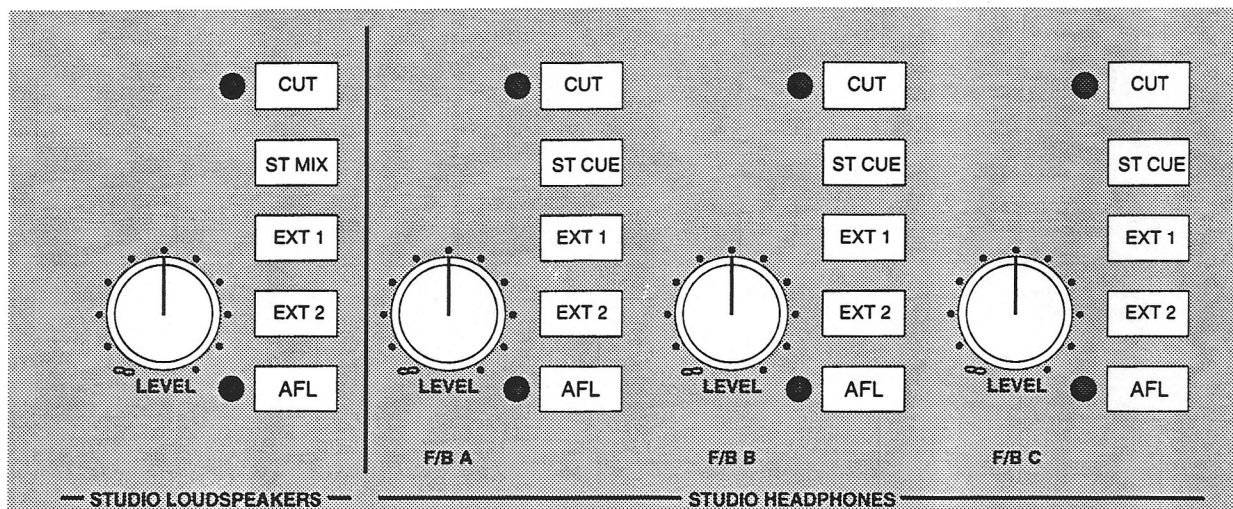


Each channel is fitted with one stereo and six mono auxiliary sends for use as foldback, echo sends or as mix-minus feeds. The master output LEVEL controls on the SL953 (see above) all have 10dB of gain when turned fully clockwise, and are indented at the unity gain position. The Stereo Cue output is additionally fitted with a BALANCE control.

FX sends 1 to 6 appear on the patch at R1-6, where they are normalled to effects units via S1-6.

The Cue Stereo send is normalled via jacks R&S7-12 to the external inputs of the Foldback circuitry (see over the page).

Studio Loudspeakers and Foldback Sends



The console provides three stereo headphone outputs - FOLDBACK A, B and C plus a stereo STUDIO LOUDSPEAKERS (SLS) output (see above).

Each output has dedicated **LEVEL** control, **CUT**, **AFL** and three source selector switches. Sources can be selected separately or summed together by selecting one or more of the switches.

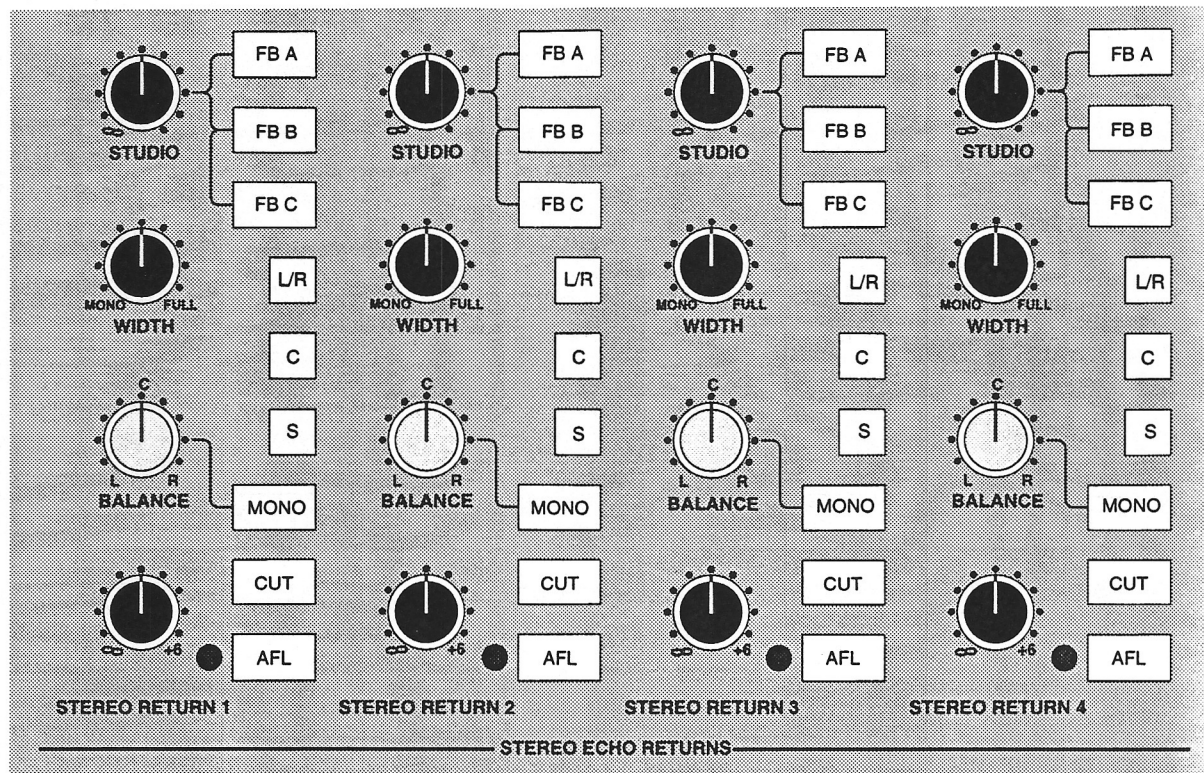
The sources for the Foldback outputs are the two external source selectors (**EXT 1** and **EXT 2**) plus a stereo input from the patch bay. This input is usually normalled from the Stereo Cue output, but individual consoles may be specified differently.

The sources for the SLS output are the two external source selectors (**EXT 1** and **EXT 2**) plus the Left and Right main outputs, pre-tone and talkback injection.

Note that the SLS feed is normally cut when the console is in **RECORD** status, to prevent speaker howlround.

The Foldback outputs are cut whenever the Oscillator to BUSSES 1-48 switch is selected.

Stereo Echo Returns



The four stereo Echo Returns are designed to be driven by the outputs of devices which have been fed from the corresponding mono FX busses described on Page 5-12.

STUDIO – The STUDIO level control and its three associated routing switches (FB A-C) allow Echo Return signals to be mixed with the three Foldback outputs.

WIDTH – Controls the stereo width of the return. Can be adjusted from full stereo to mono.

L/R, C, S – These switches route the Echo Return signals to the Main mix busses. Echo Return signals to Left and Right busses are fed in stereo. The Centre and Surround busses are fed by a mono sum of the left and right Echo Return signals. The rotary level controls at the foot of this section set levels to the Main mix busses.

MONO – When this switch is up, the BALANCE control will provide a balance between the left and right return signals. When MONO is selected, the Echo Return inputs are summed in mono, and the BALANCE control now acts as a pan control. This is very useful when you are using a mono FX device, as it saves having to parallel the Echo Return inputs on the patch.

CUT – Cuts both Left and Right inputs.

AFL – Feeds Echo Return signals (post pan control) to the AFL bus, and switches the bus output to the main monitors via the AFL level control.

Metering

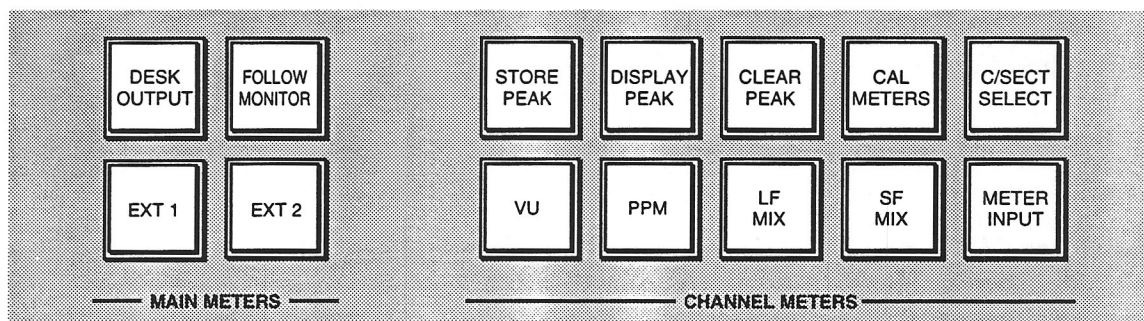
Centre Section Meters

Fitted above the SL952/953 master panels are either four VU meters and an LCD phase 'scope or five VU meters, a phase meter and two indicator panels. In either case, four of the VU meters are dedicated to reading the LCRS meter outputs from the centre section.

If fitted, the phase 'scope is fed by the left and right meter outputs.

If fitted, the fifth VU meter is fed by a mono sum of the other four meter outputs, and the phase meter by left and right meter outputs. The two indicator panels provide LED tallies showing the state of the monitor Cut and Dim switches, whether Solo is selected, whether the SLS output is un-muted, and whether the Listen Mics are on.

Four MAIN METERS buttons assign signals to these meters:



DESK OUTPUT – Selects the Main LCRS output to the main meters.

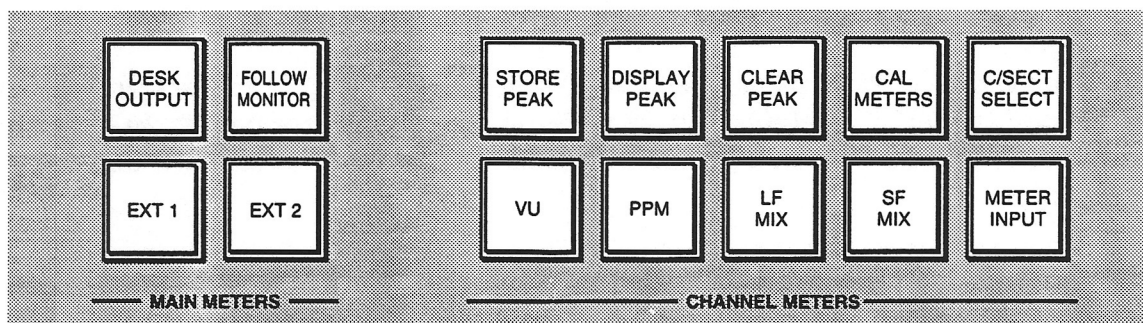
FOLLOW MONITOR – Whatever signal has been selected to the monitor loudspeakers will be displayed on the main meters.

EXT 1 – The main meters will display the level of an external source selected on External Source Selector 1, irrespective of whether it is being monitored or not. In other words, the console's main output can be monitored while the meters are used to check the returns from a stereo tape machine recording the desk output.

EXT 2 – The main meters will display the level of an external source selected on External Source Selector 2, irrespective of whether it is being monitored or not.

A bank of eight LCD meters is fitted above the computer monitor. The **C/SECT SELECT** switch, in the CHANNEL METERS bank of switches toggles the source for these meters between the four Stereo busses, the eight Auxiliary busses and the Main LCRS meter feeds. On some consoles the remaining four meters, when LCRS is selected, are fed from the patch. This allows, for example, master machine returns to be metered next to the desk output.

Channel Meter Controls



The switches in the CHANNEL METERS bank have the following functions:

PPM – Selects Peak Meter scale and ballistics. The peak scale is a fast attack (100 μ Sec) design, intended for use with both analogue and digital recorders. It is scaled from 0dB to -52dB. A reading of '0' normally corresponds to an input level of +18dBu – ie. 6dB below the digital clipping point on most professional digital recorders.

The Peak meter can be calibrated from a computer terminal to read '0' over the range +16dBu to +24dBu.

A single segment, which holds for 2 seconds, gives an indication of peak levels.

VU – Selects VU scale and ballistics. A reading of 0VU normally corresponds to a level of +4dBu but this can be changed from a terminal to give a reading of 0VU over the range 0dBu to +6dBu.

A single segment, which holds for 2 seconds, gives an indication of peak levels.

STORE PEAK – The peak level reaching each meter is stored whenever this button is pressed.

DISPLAY PEAK – When selected, the peak levels stored by the STORE PEAK button are displayed as a single segment which does not decay. This peak reading is updated as long as the STORE PEAK button is still selected.

Note that selecting DISPLAY PEAK in VU mode will turn on both Peak and VU meter scales. The peak segment is a true peak level and is shown against the Peak scale.

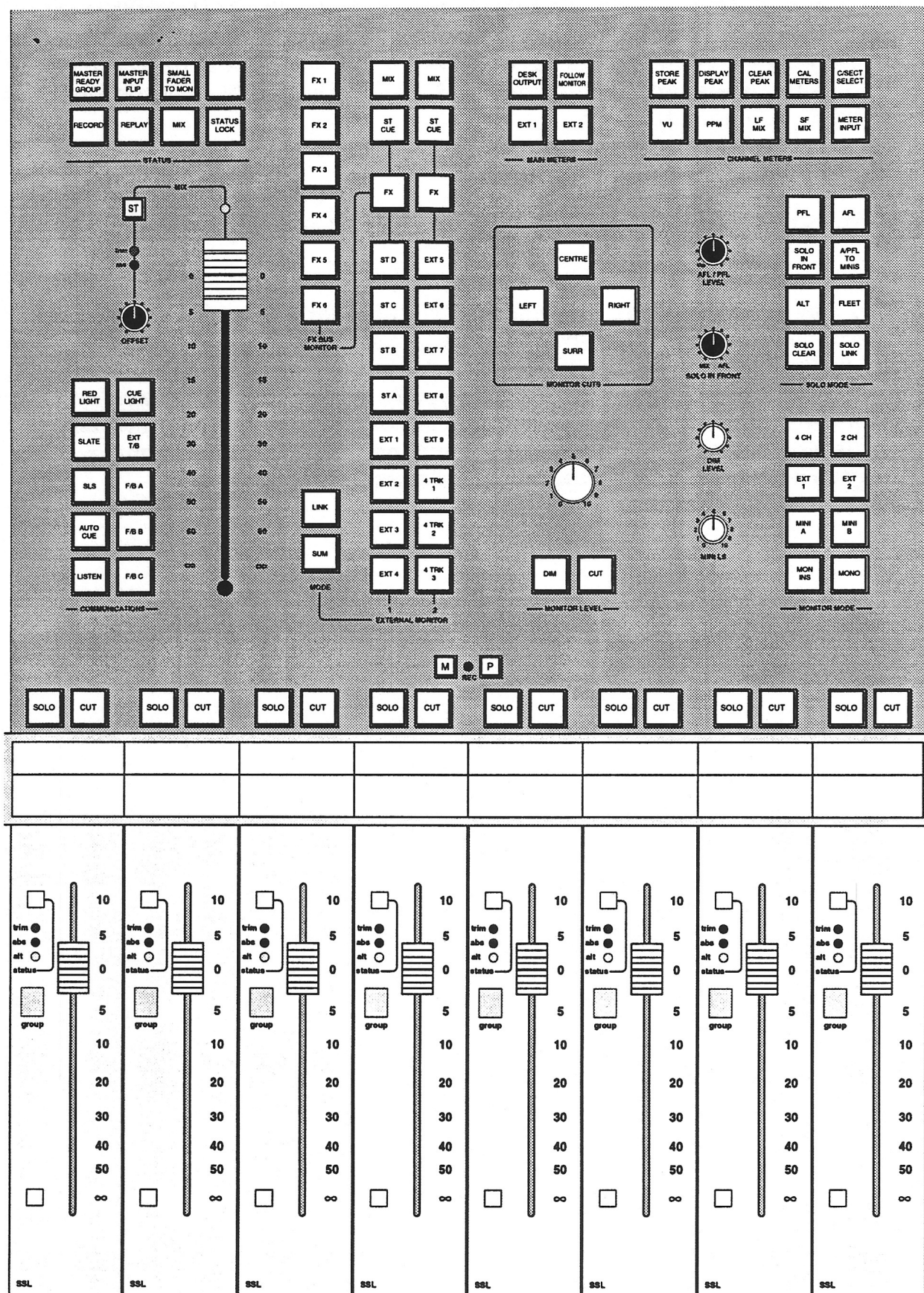
CLEAR PEAK – Clears the stored peak readings.

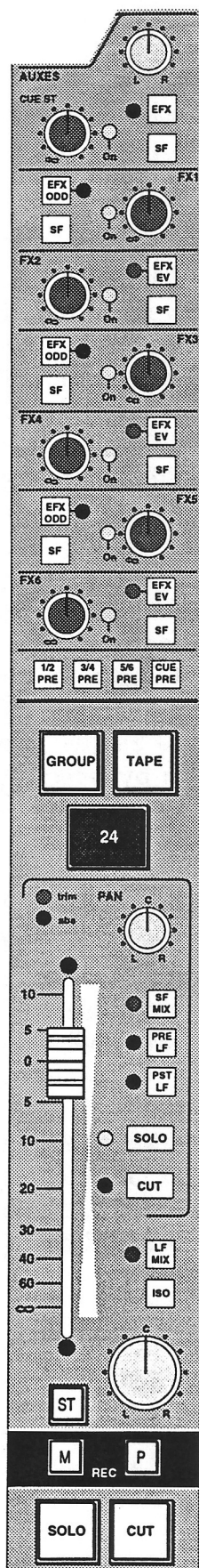
LF MIX and SF MIX – These select the meters to display the levels of the channels' Large and Small Fader VCA control voltages. This can be very useful during an automated mix if you are working with the Large Fader motors off, or simply to provide an indication of Small Fader VCA levels. These selections also apply if mechanical VU meters are fitted.

C/SECT SELECT – See Page 5-15.

METER INPUT – Forces all channel meters to display channel input signals.

CAL METERS – This function is provided for use on the odd occasion when the LCD meters may need calibrating. Calibration may drift with time and temperature, and this condition will be indicated by more than one segment showing at the foot of the meter (with no signal present). If you suspect that the meter calibration has drifted, press CAL METERS and hold it down until you hear the meter relays 'clunk' (approx 2 secs). The system will now carry out a self-calibration procedure and, after about 20 seconds, another clunk will indicate completion. Note that the channel number display on each meter extinguishes during the calibration procedure.





The Auxiliary send section includes one stereo and 6 mono aux send controls. The Aux On/Off function for each send is automated, with push/push switches on each control toggling between on and off. A yellow LED indicates that the send is On. Auxes can be sourced from either fader. The SF switch next to each send switches the source to the small fader. The PRE switches at the bottom of the section switch the aux source to pre-fader. There is a PRE switch for the Stereo Cue send and one PRE switch for each pair of mono sends.

A major advance on the SL4000 system is the FX send reassign system – EFX for short. This allows any two mono FX sends, or the stereo cue send, to be disconnected from their respective busses and used as sources for the channel's Group Output, the channel's Stereo bus routing and/or the channel's Multitrack routing.

Aux sends are assigned to the EFX system using the EFX switches by each one. FX1, 3 and 5 can be assigned to EFX ODD. FX 2, 4 and 6 can be assigned to EFX EVEN. Selecting EFX on the Stereo Cue send feeds Stereo Cue L to EFX ODD and Stereo Cue R to EFX EVEN. Note that only one odd and one even numbered FX send or Stereo Cue can be assigned. Red (EFX ODD) or green (EFX EVEN) LEDs indicate that a send is assigned to the EFX system.

GROUP, TAPE and the Record Enable switches function identically to the SL4000 system.

The Small Fader section is similar to that on an SL4000. Both the fader and CUT switch are automated. The Small Fader pan is located here and, unlike the SL4000, is *always* associated with the Small Fader. The pan is permanently in circuit. The Small Fader can be assigned to the Main Stereo mix bus using the SF MIX switch.

In MIX or RECORD/REPLAY + SMALL FADER TO MON(itor) status, the Small Fader is normally sourced from the Monitor input. In RECORD or REPLAY status the Small Fader is normally sourced from the channel input. This selection can be overridden by the PRE LF/PST LF fader switches. The PRE LF switch will pick up the channel signal immediately post input selection, or the channel signal post signal processing. Which signal is chosen is set by an internal link option. PST LF selects the post Large Fader signal.

The Small Fader has it's own automation status switch and LEDs.

Group Faders

Eight Group Control Faders are located below the SL952 panel. These faders can control any number of channel faders that are assigned to them using the **HARD GROUP SETUP** function (on the top left of the SL955 Motion Control panel). Any Group may be assigned to another Group. For example, all Drum channels could be assigned to Group 1, Bases to Group 2, Keyboards to Group 3 and Guitars to Group 4. These four groups may then all be assigned to Group fader 5, which will now act as an overall backing level control.

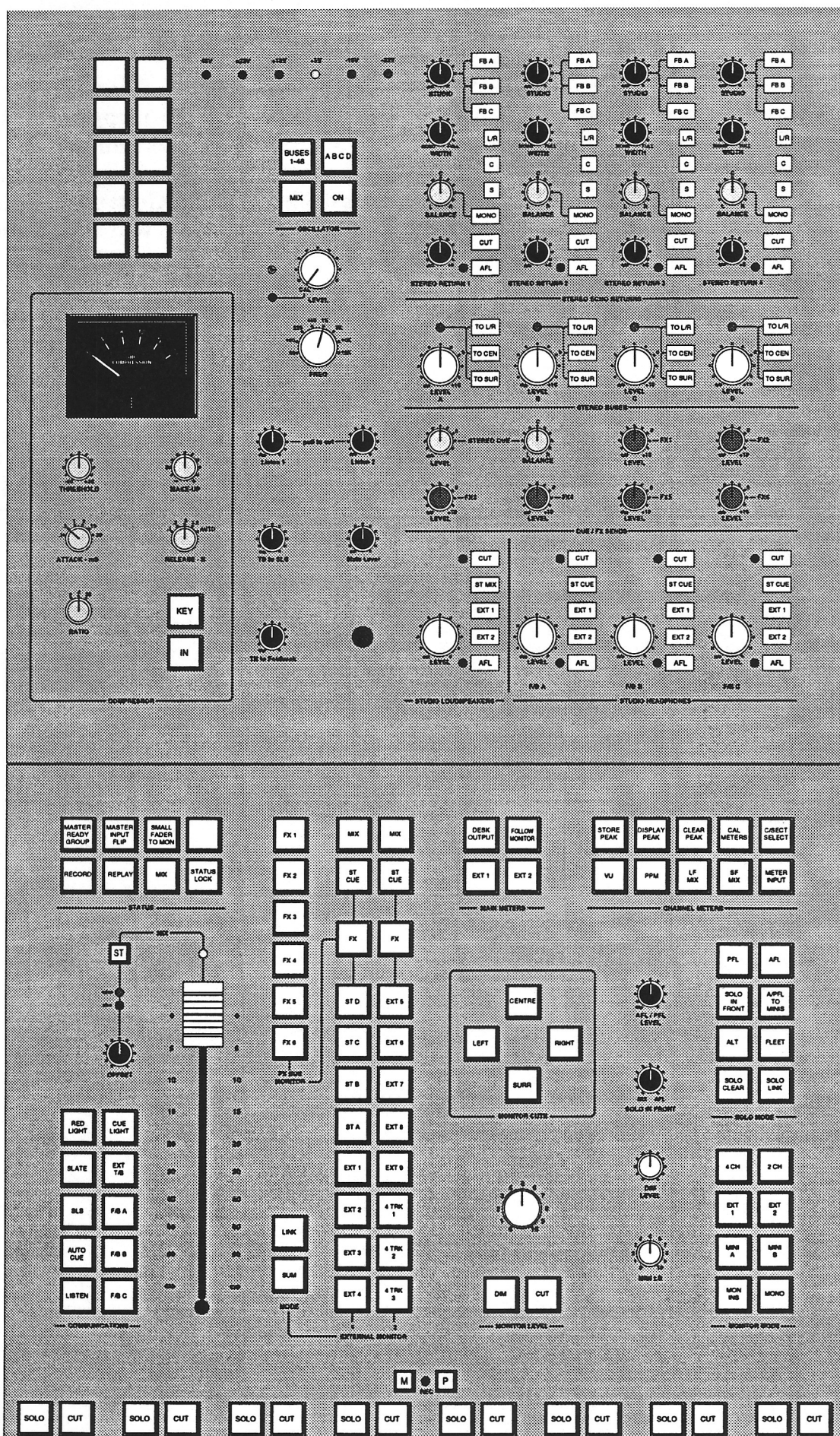
See Section 3 of this manual, and the J Series Computer Operator's Manual, for more details on grouping assignments.

CUT – Will mute all faders assigned to that Group.

SOLO – The Group Solo works slightly differently to the Solo function on an I/O module, in that it cuts all Groups which are not soloed. The cuts thus generated will be read by the J Series Computer during an automated mix (Note that an I/O module Solo will cut all other channels not soloed but these cuts are *not* recorded by the computer).

This is extremely useful as it is possible to 'play' the Group Solo buttons during a mix and store the results. For example, if Groups 1 and 2 (as above) are soloed during an automated mix, the computer will store the cutting of all the other Groups. This will have the effect of reducing the backing track to Bass and Drums only

The Group Fader solo switches can be disconnected from the automation system in the J Series Computer's Switch Protection menu – see Computer Operator's Manual for more details.



Communications

Talkback level controls are fitted on the SL953 panel, to the right of the main output compressor (see opposite). In addition to a built-in talkback microphone, the controls set the level of talkback to the studio loudspeakers (TB to SLS) and headphones (TB to Foldback), Slate Level and incoming Listen Mic levels. The talkback microphone is fitted flush into the control surface next to the TB to Foldback level control.

TB to Foldback and TB to SLS – These controls set the level of talkback to the Foldback (A, B and C) and the SLS (Studio Loudspeakers) outputs. Note that talkback is inserted after the Foldback and SLS level controls (see Page 5-13).

Slate Level – This control allows the level of talkback to tape to be adjusted. A low level 30Hz tone is added to the slate signal so that an ident may be easily located at high tape wind speeds.

Listen 1 and 2 – The Listen Mic gain controls have integral pull-for-off switches. Two listen mics can be placed in the studio and connected to the console's Listen Mic Inputs. These feed up to the patch and appear at N&P 41-42. The mic signals are mixed together via the level controls and fed to a compressor (more on this below).

The group of COMMUNICATIONS buttons (to the left of the Main Fader – see opposite) controls the switching and routing of Talkback and Listen Mic signals, as well as the switching of a Red Light.

RED LIGHT – Provides an isolated contact closure for hooking up to a studio red light or transmission light via an external relay box. When the AUTO CUE button is on (see below), the red light can be activated automatically when the multitrack goes into Record. (Internal links can be set to select this option from machine Play or Record).

CUE LIGHT – Provides an additional isolated relay closure for hooking up to studio cue lights etc.

SLATE – Cuts all loudspeakers and feeds the talkback mic to multitrack busses 1-48, Main output busses, Foldback sends and Studio Loudspeakers. A low level 30Hz tone is mixed in with the signal to tape so that the slate may be easily located at high wind speeds.

EXT T/B – Provides switched talkback which appears on the patchbay at N44, for use as an additional talkback send to the studio floor, the machine room or anywhere else you fancy!

The **SLS**, **F/B A**, **F/B B** and **F/B C** buttons send talkback to those respective outputs.

AUTO CUE – This activates an autocueing system, useful in an overdubbing situation. Talkback and optionally the Listen Mic switches, which are normally non-latching, can be latched on for constant two way communication when the multitrack is in Stop or Wind. The Talkback (and Listen Mic) signals are automatically switched off when the machine enters Play or Record.

LISTEN – Feeds the Listen Mics to Mini Loudspeakers 'A' and dims the Main Loudspeakers.

Oscillator

The oscillator section (see right) contains controls for frequency, level and routing of the oscillator to the Main outputs, the Stereo Subgroup outputs and the Multitrack Group outputs.

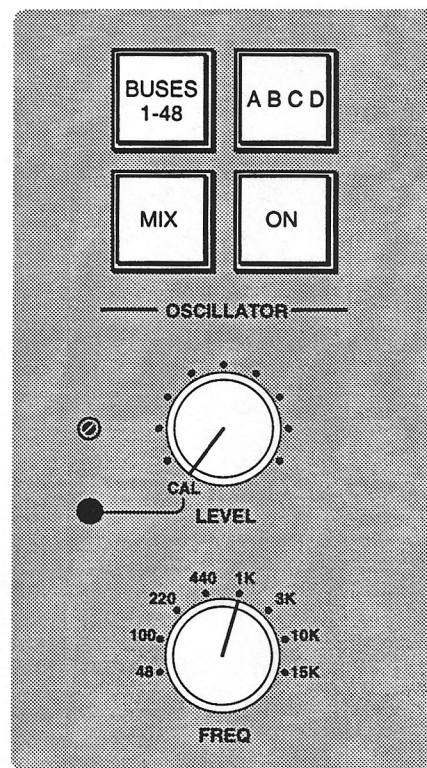
BUSSES 1-48 – Routes the oscillator to all multitrack Group outputs.

MIX – Routes the oscillator to the main LCRS outputs.

A B C D – Routes the oscillator to the four Stereo Subgroup outputs.

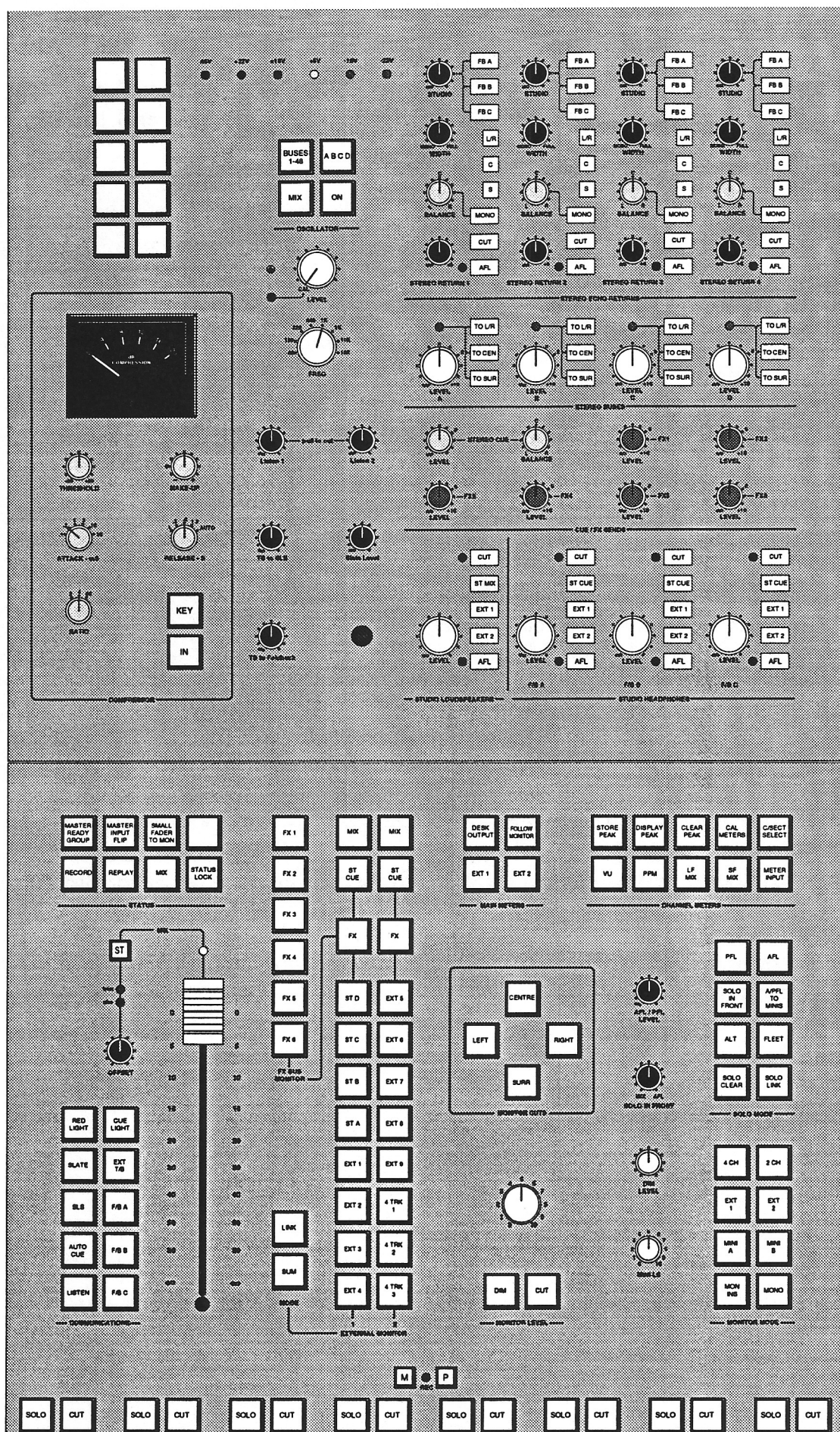
ON - Switches the oscillator on, would you believe. It's good practice to turn the oscillator off when recording, to prevent any leakage onto the desk outputs.

The rotary **FREQ** switch provides eight preset frequencies. The **LEVEL** control adjusts the output level from -25dB to +20dB. When fully anticlockwise, a preset level is selected which can be calibrated with the small multiturn pot located to the left of the main level control. A red LED lights to show when the level control is no longer in the calibrated position.



The oscillator output is available on the patch (jack N9) and is normalised to the tone distribution system (P9). This allows an external oscillator to be fed into the tone routing switches – very useful for injecting those odd frequencies or for pink (or red!) noise.

A second output, 60dB lower than main oscillator output, is available on jack N10 for testing microphone inputs etc.



Option Switches

A variety of functions may be provided by the ten user option switches at the top left of the SL953 panel. Depending on the console specification, these can include:

SMALL FADER TO MONITOR – For 8-channel bays or groups of bays. This function forces channels in the designated bays to Small Fader to Monitor mode when the console is in Record status. This is useful when tracking, allowing the Large Faders on Modules 1-24, for example, to act as Monitor faders and the Large Faders on selected bays to act as Channel faders (see Section 2 for more on this).

SOLO ISOLATE – Isolates a designated 8-channel bay, or bays, from the Large and Small Fader solo cut busses.

CHANNEL IN TO METERS – Forces the designated bay or bays to meter channel input signals.

MASTER CHANNEL INPUT FLIP – Flips channel inputs in the designated bay or bays, provided the console-wide MASTER INPUT FLIP is not selected.

Blank Panel

A panel is available to mount custom options above the SL953. If this panel is currently blank, please contact your local SSL office or distributor to discuss the various possibilities.

The SL 955J Motion Control Panel

All the functions on this panel, situated below the computer monitor, are fully described in the J Series Computer Operator's Manual.

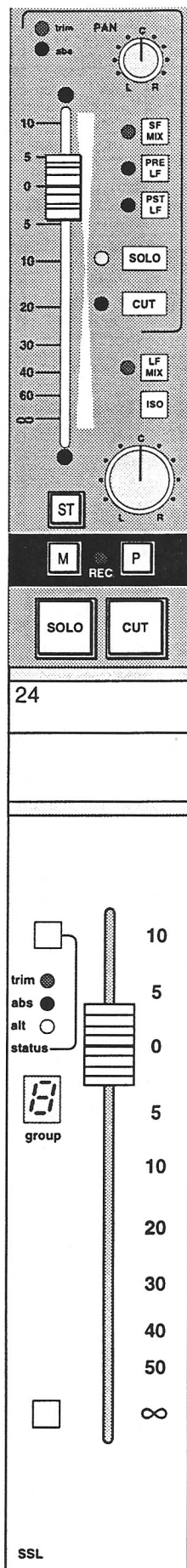
Solid State Logic
SL 9000 J Series
Total Studio System

Console Operator's Manual

SECTION 6

The Patch





Below the Small Fader is the Large Fader pan control. This is always associated with the Large Fader and is always in circuit.

The Large Fader **CUT** switch is automated. This and all the other automated switch objects in the channel make use of the Match and Play switches fitted above the Large Fader **CUT** and **SOLO**. See the J Series Computer Operator's Manual for more details.

As with the Small Fader Solo switch, the Large Fader **SOLO** switch can act as a destructive solo, a post pan listen (AFL), a pre-fade listen (PFL) or as a Solo In Front function. This last mode provides a mix of the AFL signal and dimmed Main Mix to the monitors. The different solo functions are selected with the solo mode switches in the console's centre section. These switches also include a **SOLO CLEAR** switch, **ALT** which makes all solo switches intercancelling, **FLEET** which makes them momentary, and **SOLO LINK** which links Large and Small Fader Solo cut busses.

The Large Fader is motorised and, like all SSL Ultimation systems, can switch the audio via a VCA to allow Trim updates etc. See the J Series Computer Operator's Manual for more details.

The Large Fader can be assigned to one of the 8 master control faders in the centre section, by using the group select switch at the bottom of the fader. Selecting **HARD GROUP SETUP** on the Motion Control panel enables the select switches. A short press of the individual select switches increments the group number in that fader's 7-segment display; a slightly longer press decrements.

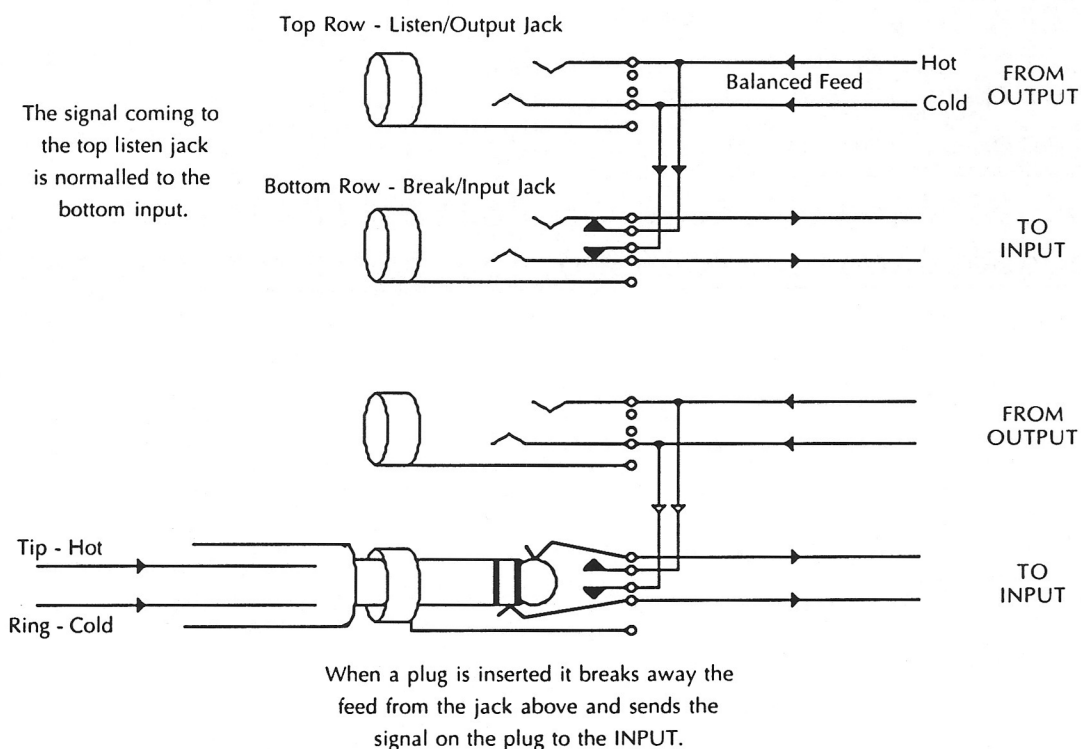
The Patch

The SL 9000 J Series patchbay is supplied with a minimum of nine, 1U (rack unit) high, panels of bantam (TT) mini-jacks, each with two rows of jacks.

Each row will contain a different number of jacks according to the number of I/O modules in the console. Consoles with more than 56 channels come with the patch split into two columns, ie. two columns of 32-wide rows for a 64 channel console, two columns of 40-wide rows for an 80 channel console etc. The majority of consoles are supplied with integral patchbays, however, as an option, versions with remote patchbays are available. The layout and normalling of a remote patchbay will be the same as that for an integral one of the same size.

The rows in each patch panel comprise a logical pair, the upper jack being an output feed and the lower jack being an input. There are two types of normalling used within the patch:

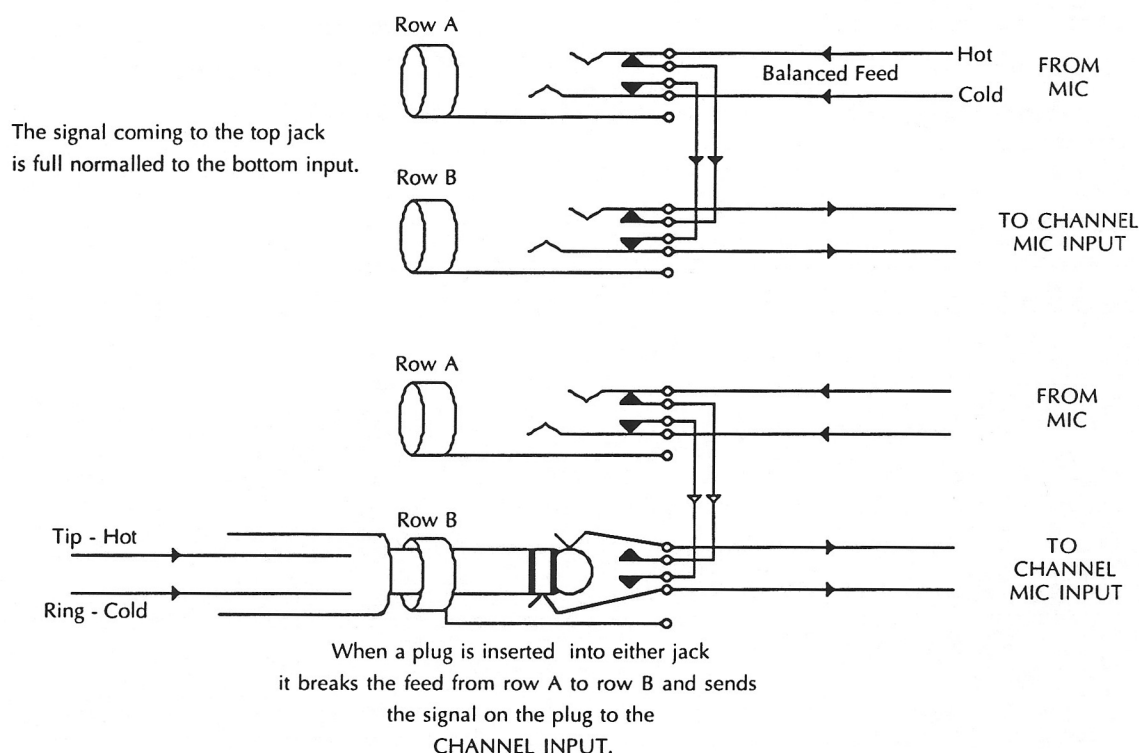
HALF-NORMALLED – The top row is an output listen (bridging) jack. If a jack is inserted into the top row it receives the feed on that socket but does not break the normalling to the row below. The outers are wired down to the inners (blades) of the row below. The bottom row is an input jack and when a patchcord is inserted, it breaks away the normalled feed from the row above.





FULLY NORMALLED – The top row inners are wired to the bottom row inners. A jack plugged into either the top or bottom row will break the normalling.

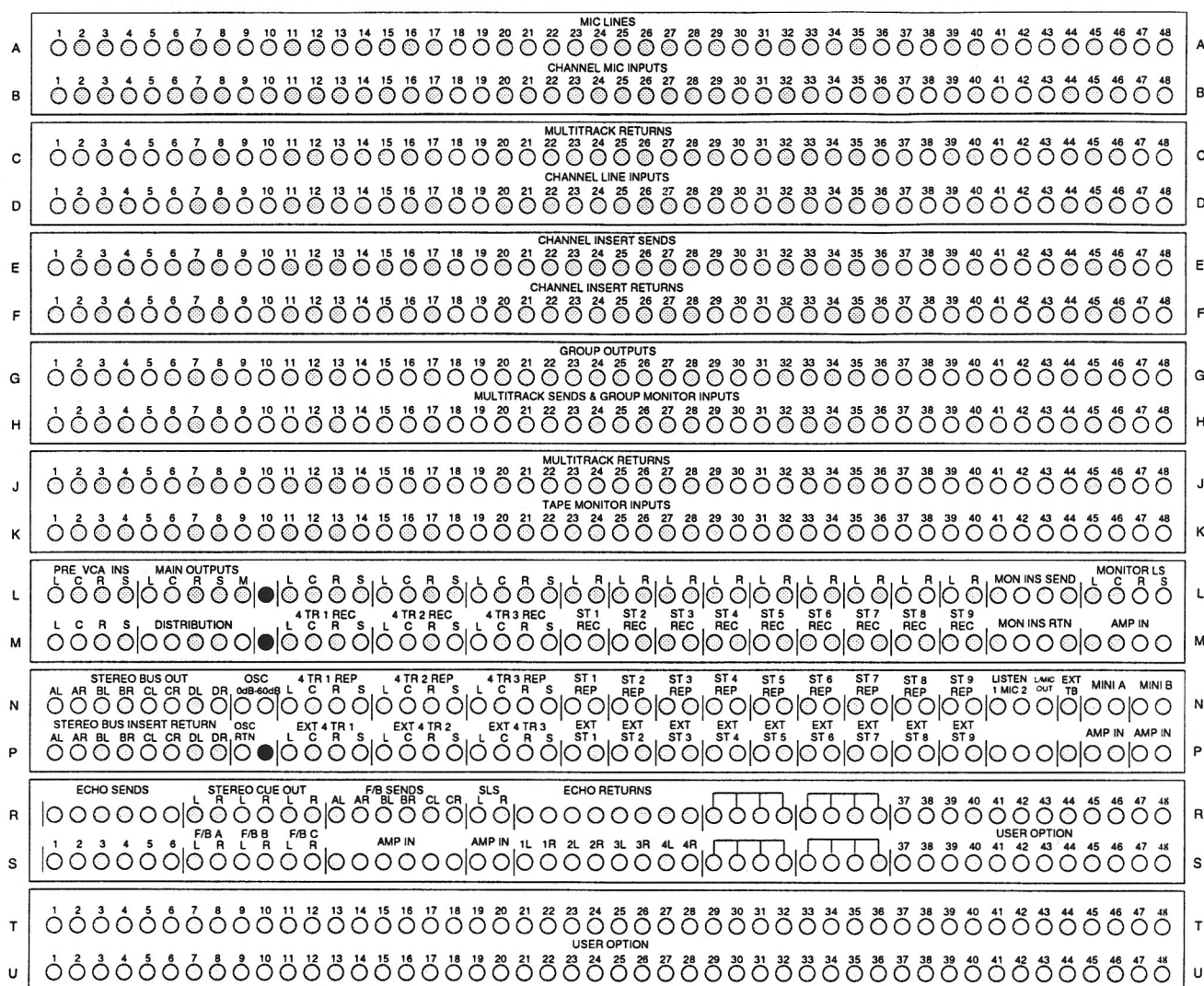
Only the first two rows of jacks (the Mic Lines and Channel Mic Inputs) are fully normalled to prevent a microphone from being connected to two Channel Inputs simultaneously. Most of the other rows are half normalled, apart from the User Option jacks in Rows R, S, T & U (unless normalling was requested in the console specification). Any additional rows fitted may, or may not, be normalled and this should be checked locally with the facility.



ROWS A to K are fairly obvious with these exceptions and notes:

The Multitrack Returns (ie. multitrack outputs) split on entering the console and feed identical signals to both Rows C and J.

Signal is always present at the Channel Insert Send jacks (Row E). It is the return signal path that is switched by the insert IN switch. This is useful for setting input levels on effects devices before switching them in, and also useful for picking up additional feeds from each module.



Group Outputs on Row G are after the I/O module Bus Trim control. These are normalled down to Row H. Row H feeds the Multitrack Sends (i.e. the multitrack inputs) and also the **GROUP** monitoring button. The **GROUP** button on a module will always monitor a Multitrack Send even if the Groups have been cross patched.

ROWS L to S – Some jacks are cross normalled and these are detailed below together with certain inputs and outputs, the wiring of which may not be immediately obvious. Note that the following descriptions are based on a 48-channel patchbay. According to the size of your console, there may be some variation in the layout of rows beyond Row K. Rest assured that all the functions and normalling described below will be the same for all consoles, regardless of the actual location of those functions.

PRE VCA INS (L1-4, M1-4) – Four insert points after the LCRS bus mix amps and before the Main Output VCA Fader (and 4-channel Compressor). These insert points can be used to insert other compressor/limiters or EQs into the main desk outputs.

MAIN OUTPUTS + DISTRIBUTION (L5-L9, M5-M9) – These are the main LCRS and Mono Outputs from the console. L5-8 carry the main LCRS Outputs which are normalled down to the main LCRS distribution jacks M5-8. These four jacks feed the 4-Track and Stereo Recorder jacks L11-L40. 4-Track 1 and Stereo 1 are fed directly from M5-8; all the other Recorder feeds are buffered. The three sets of 4-Track Recorder inputs (L11-22) are derived from the LCRS outputs (M5-8). The stereo machine inputs (L23-L40) are fed from the L and R Outputs, M5 & M7.

The four Distribution jacks (M5-8) can be useful for multi-machine tape copying. Plugging the source signal into M5 and M7, for example, will feed the inputs of all Stereo machines connected to jacks M23-40.

TAPE MACHINES (L, M, N, P 11-40) – Four jacks for each machine track. The top jack (Row L) provides the console main output which is normalled to the machine Record input (Row M). The machine Replay output comes up on Row N and is normalled down to the External Monitor Selector inputs (Row P). The inputs on Row P are very useful if you need to meter a signal. For example, patching into jack P23 and selecting **EXT 1** on the External Selector 1, with the main meters selected to **EXT 1**, will bring the source up on the Left main meter.

STEREO BUS OUTPUTS and INSERT RETURNS (N1-8 and P1-8) – These provide a post main level control Output/Insert for the four Stereo Subgroup busses, A, B, C and D. If used as an insert point for external limiters, EQ etc., the effect will be applied before the busses are folded back to the main LCRS mix busses (See Sections 2 and 5 for more on this). The Insert Return jacks (P1-8) feed External Monitor Selector 1 and also the console's connector panel for connection, if required, to an external layback machine.



OSC (N9-10 & P9) – Yes, the oscillator! N9 provides the normal oscillator level signal and is normalled to P9, the console's tone distribution system. Oscillator distribution within the console is handled by the **BUSSES 1-48, ABCD** and **MIX** selection buttons in the centre section. If required, an external oscillator or pink noise source can be patched into P9 for distribution to the desk's Group Outputs, Stereo Subgroup Busses or Main LCRS Outputs. N10 provides an oscillator output at -60dB – useful for checking microphone inputs.

MONITOR INSERT (L41-44 & M41-44) – This is a switchable insert point, pre the main monitor level pot, provided for the connection of a Dolby Surround Encoder/Decoder.

MONITOR LS (L45-48 & M45-48) – L45-48 carry the Main monitor outputs which are normalled to M45-48 feeding into the Main monitor amps. **WARNING** – These jacks feed directly to power amps. Patching a standard line level signal into them will run the monitors flat out, probably causing damage to the speakers and your ears.

MINI A and MINI B (N45-48 & P45-48) – The feeds to two pairs of (near-field) monitors. Again remember that plugging line level sources into jacks P45-48 may blow the speakers.

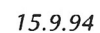
LISTEN MICS (N41-43 and P41-42) – N41&42 should be wired to two mics hanging in the studio area. P41-42 are normalled from the mics and feed into the console Listen Mic inputs. Level controls and on/off switches for these mics can be found in the centre section. N43, L/MIC OUT, provides an output of the Listen Mic circuit post-compressor, the sound of which is much loved by many experienced SL4000 users. Note that a sum of both Listen Mic Inputs is fed via the compressor so you need to cut the other input if you only want a feed from one mic.

EXT TB (N44 & P44) – The External Talkback feed. The top jack carries a switched talkback feed from the mic in the console, activated by the **EXT TB** button on the SL 952. The bottom jack feeds this signal to a destination known only to the studio wiring staff.

ECHO SENDS (R1-6 & S1-6) – These carry the FX Send 1 to 6 outputs which are normalled to the effect send lines out of the console (S1-6).

STEREO CUE OUT (R7-12 & S7-12) – Three parallel outputs of the Cue Stereo Bus which are normalled to the switch selectable **STEREO CUE** inputs of the centre section's Studio Headphone circuits, F/B A, B and C.

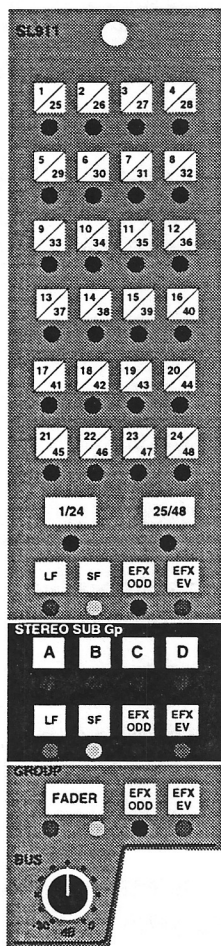
F/B SENDS (R13-18 & S13-18) – Three stereo Studio Headphone outputs as described above. These can be fed from a choice of Cue Stereo or sources from the two External Monitor Selectors. The outputs in the upper row are normalled to foldback amp inputs in the lower row.



SLS (R19-20 & S19-20) – The Studio Loudspeaker outputs are normalised here to the power amp feed. Watch it!

ECHO RETURNS (R21-28 & S21-28) – R21-28 may be wired to the outputs of reverb or effects devices. They are normalised to the inputs of the four Stereo Echo Returns, situated in the console's centre section.

We are always interested to learn how many users actually read our operational manuals! If you are reading this, we would like to hear from you. If you are reading a paper version of the manual, write your name, facility name and address, in the space below and fax this page to +44 (0)1865 379100. If you have any comments to make about this manual, please fax them along with this sheet. If you are reading this from a CD-ROM, then e-mail steved@solid-state-logic.com. If you are reading from our www site, e-mail daveg@solid-state-logic.com. In either case, please include the information requested above. Multiple applications will be disqualified! The first five respondents will receive a small but useful gift from SSL; the first respondent will also receive additional goodies! This competition is not open to employees of SSL, their partners, relatives, pets or alter egos.



There are four possible outputs from the channel strip:

- The Main Mix stereo bus
- The four Stereo Subgroup busses (A, B, C and D)
- The 48 Multitrack busses
- The channel's Group Output

Either or both faders can feed the Main Mix bus via the **LF MIX** and **SF MIX** switches at the foot of the channel strip; the other three outputs each have a source selector.

The Multitrack and Stereo Subgroup busses can be fed by Large or Small Fader (post pan control) signals, or by one or both of the EFX ODD/EVEN signals. If one EFX switch is selected, then the corresponding routing output will be fed in mono by the selected source. Selecting both switches together will feed EFX ODD to left (odd) and EFX EVEN to right (even) bus. This enables any two Aux Send controls to be re-routed to the Multitrack or Stereo busses, allowing large numbers of separate mixes to be generated without using the Small Fader.

The 48-track routing is accessed via **1-24/25-48** bank select switches and signals are normally sourced from the Small Fader unless **RECORD/REPLAY + SMALL FADER TO MON(itor)** are selected.

The Stereo Subgroup bus routing has no source until one is selected.

The Group Output is normally fed by the multitrack bus Mix Amp, but this can be replaced with a post-fader channel signal by pressing **FADER**, or by the EFX ODD or EFX EVEN signals.

5.1 SURROUND SETUP .. SCOTT WALKER/PETE WALSH 25/5/00

Main mix L R o/p to Tascam input 1 and 2

front LEFT / RIGHT

St Bus B, L o/p to Tascam input 3

central

St Bus C, L R o/p to Tascam input 4 and 5

rear LEFT / RIGHT

Aux 6 send to dBx 120SP sub bass unit to Tascam input 6

sub Bass

Monitoring

Turn main monitors down (off)

Tascam o/p 1 and 2 to Tape Monitor input 27 and 28.

Send small fader 27 to group o/p 1. Patch to front left amp input

Send small fader 28 to group o/p 2. Patch to front right amp input

Tascam o/p 3 to Tape Monitor input 29

Send small fader 29 to group o/p 3. Patch to centre amp input

Tascam o/p 4 and 5 to Tape Monitor input 30 and 31.

Send small fader 30 to group o/p 4. Patch to rear left amp input

Send small fader 31 to group o/p 5. Patch to rear right amp input

Tascam o/p 6 to Tape Monitor input 32.

Send small fader 32 to group o/p 6. Patch to sub bass amp input.

Software sub- group small faders 27 to 32 to small fader 25. This becomes the master monitor level control (volume pot).

Don't at any point send any of these small faders to the main mix, any of the sub groups B or C or Aux 6 or nasty loud feedback will happen.

Centre Section

The SL 9000 J centre section is logically divided into two main areas (see the picture on Page 1-ii). On the left, two panels provide master controls for the console's audio functions – console status switching, main outputs and monitoring, subgroup and auxiliary masters, meter switching, talkback, FX and cue send masters, echo returns, oscillator etc. Below these panels, eight master control faders are provided.

The right hand side of the centre section is taken up by a large colour video monitor and a panel housing controls associated with the J Series Computer. A jog wheel, a standard set of transport controls, five instant locate buttons and a large timecode display are provided for machine control. A pen and tablet interface for the computer is provided in the fader area. See the J Series Computer Operator's Manual for more details.

See over the page for a basic description of the centre section audio controls.



Master Audio Facilities

The SL 9000 J master audio facilities are built to a completely new design, offering high performance, low noise, high bandwidth and low distortion. The controls provide all of the functionality of a G Series centre section, plus master facilities for the additional Auxiliary and Stereo Subgroup busses. The foldback and external source selection systems are substantially refined and extended. Additional switching for the new Solo modes is provided.

The main console output is 4-channel with a 4-channel fader and compressor. The output is provided with a pre-fade insert point. The compressor is identical to the design used in the G Series range. Selecting **KEY** bypasses the pre-fade insert point and allows the insert return to be used as a key input. The Master Fader has its own status button and LEDs. The **OFFSET** control allows the Master Fader level to be adjusted while still leaving the Master Fader at the top of its travel.

The Left and Right Main outputs are fed from console-wide busses. If the LCR Film Pan option is fitted, then the Centre bus can also be fed directly from the channels. The four Stereo Subgroup busses can also be re-routed back to the Left/Right, Centre and Surround outputs, allowing four-channel mixes to be built up even if the console does not have the LCR panning option fitted. The Centre and Surround outputs are fed by a mono sum of the selected Stereo Subgroup bus.

The main monitor output is 4-channel with a switchable insert point, pre the monitor level control, for Dolby Surround encoders/decoders. Two pairs of near-field monitor outputs are also available, and can be selected using the **MINI A** and **MINI B** buttons.

The monitors are normally fed by the desk main output, but this can be replaced by either one of two External Source selector banks by selecting **EXT 1** or **EXT 2**. The External Source selectors have independent sources, unlike the SL4000. The buttons are normally intercancelling, but selecting **SUM** allows several sources to be monitored together. **LINK** connects both source selectors together, for comprehensive multiple-source selection.

The Auxiliary bus outputs are provided with level control only.

The Studio monitor system has been substantially extended. Three stereo Foldback and one stereo Studio Loudspeaker outputs are provided. Each is provided with level control and can be fed by any one or a mix of External Source Selector 1, External Source Selector 2, or an external signal fed via the patchbay. For the Foldback outputs this is normally the Stereo Cue output, but this may vary from desk to desk. For the Studio Loudspeakers, the third source is always the stereo main Mix output.

The four stereo Echo Returns are similar to those fitted on the SL4000, with the addition of discrete routing switches to the main outputs. Note that the **STUDIO** level control feeds signal back to the Foldback outputs - not the Auxiliary busses.

Oscillator and Talkback level controls are similar to those found on the SL4000.

Solid State Logic
SL 9000 J Series
Total Studio System

Console Operator's Manual

SECTION 2

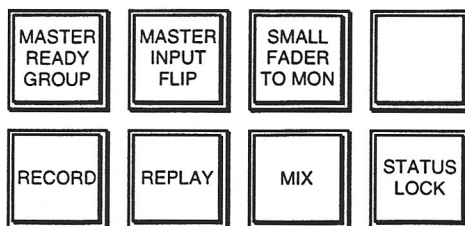
Basic Routing and Signal Flow



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Basic Routing and Signal Flow

In order to understand signal flow through the console, it is probably best to start with the status buttons located on the SL952J Master Panel. These buttons determine basic signal paths in the SL911J I/O module, so they are very important. Exact details of each local control can be found in Sections 3 and 5.



When first setting up the console, you should always check these buttons and select them correctly for the particular mode you wish to work in.

There are four basic desk statuses: RECORD, REPLAY, MIX and RECORD + MIX (overdub). The SMALL FADER TO MON(ITOR) and MASTER INPUT FLIP buttons also affect I/O module signal flow.

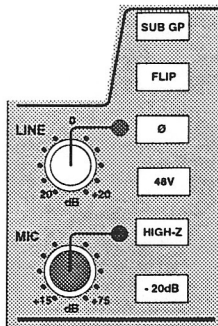
Each I/O module has two completely independent audio signal paths, the 'Channel' path and the 'Monitor' path (typical of an *In-Line* console). This gives the system flexibility, but may cause some confusion if you don't understand which areas of each module are dealing with each of these signals.

The Six Key Points in the SL911J

There are six key points in each I/O module which define the two separate audio paths: two inputs to the module, two faders and two outputs from the module. The status buttons determine how these elements are connected together to provide default configurations required for tackling various tasks from track laying through to final mixdown.

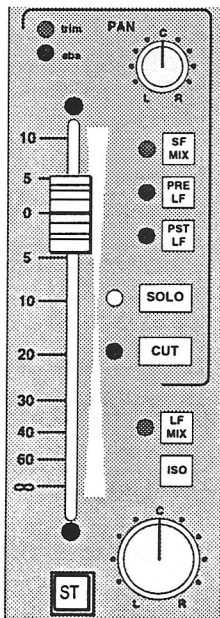
The six key elements in the signal paths are:

The Channel Input



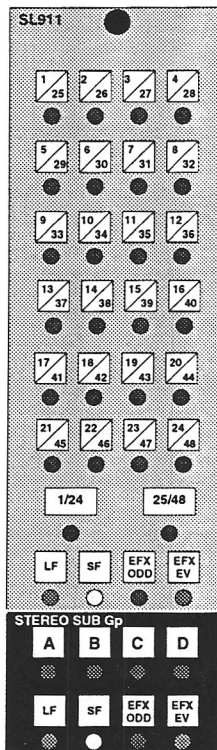
The Channel Input section can be found towards the top of the module and has three inputs: MIC, LINE and SUBGROUP. We will deal with the SUBGROUP input later. The **FLIP** button allows you to flip between MIC and LINE inputs. *All* inputs can be flipped by using the **MASTER INPUT FLIP** button located in the SL952J master status button group. The other controls on the input section are fairly obvious but are detailed in Section 3.

The Small Fader and Pan



The Small Fader is linked to the computer automation system. Its associated pan control is mounted above and to the right of the fader. This will normally pan between Left/Right or Odd/Even busses unless the optional LCR panning system is fitted, in which case a separate Centre bus is also available.

The Routing Matrix

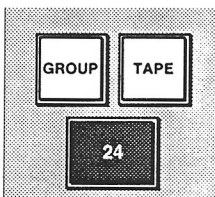


The Routing Matrix provides access to 48 Multitrack busses and four Stereo Subgroup busses. Bus selection is simple in operation, with two buttons determining the Multitrack bus selection for tracks 1-24 or 25-48.

Sources for the Multitrack and Stereo Subgroup busses are determined by the buttons beneath each section. Default selection of Large or Small Fader sources for the Multitrack busses is made by the master Status buttons on the SL952J but this can be overridden locally as required (see later).

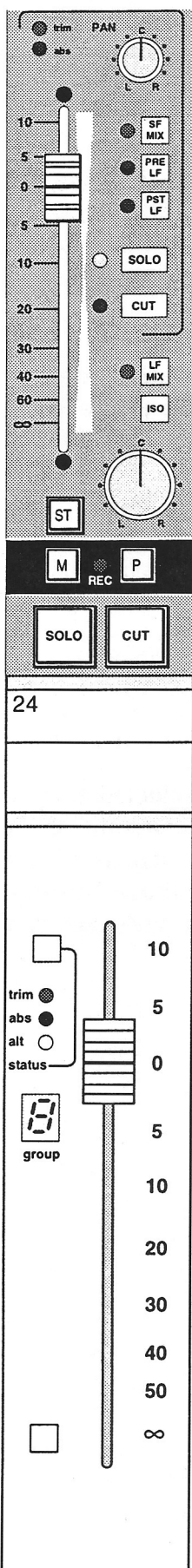
Source selections for the Stereo Subgroup busses are independent of the master console status and may be chosen according to the job in hand. See Page 2- 25 for a description of the EFX re-assign system.

The Monitor Input Section



The Monitor Input buttons enable two sources to be selected for the monitor path. **GROUP** selects that module's Group Output, which also feeds the multitrack. **TAPE** selects the track output of the multitrack machine. It is possible to select both of these buttons together to get a mix of the two signals. You will find a more detailed account of this in Section 3.

The Large Fader and Pan



The Large Fader is linked to the computer automation system. Large Faders may be assigned for control by one of the eight group faders in the centre of the console.

An associated pan control is provided directly above the fader at the foot of the I/O module. This will normally pan between Left/Right or Odd/Even busses unless the optional LCR panning system is fitted, in which case a separate Centre bus is also available.

The Output to Mix Bus Controls

Two buttons, **LF MIX** (above the large Fader pan) and **SF MIX** (below the Small Fader pan) determine which fader will feed the console's main Mix bus.

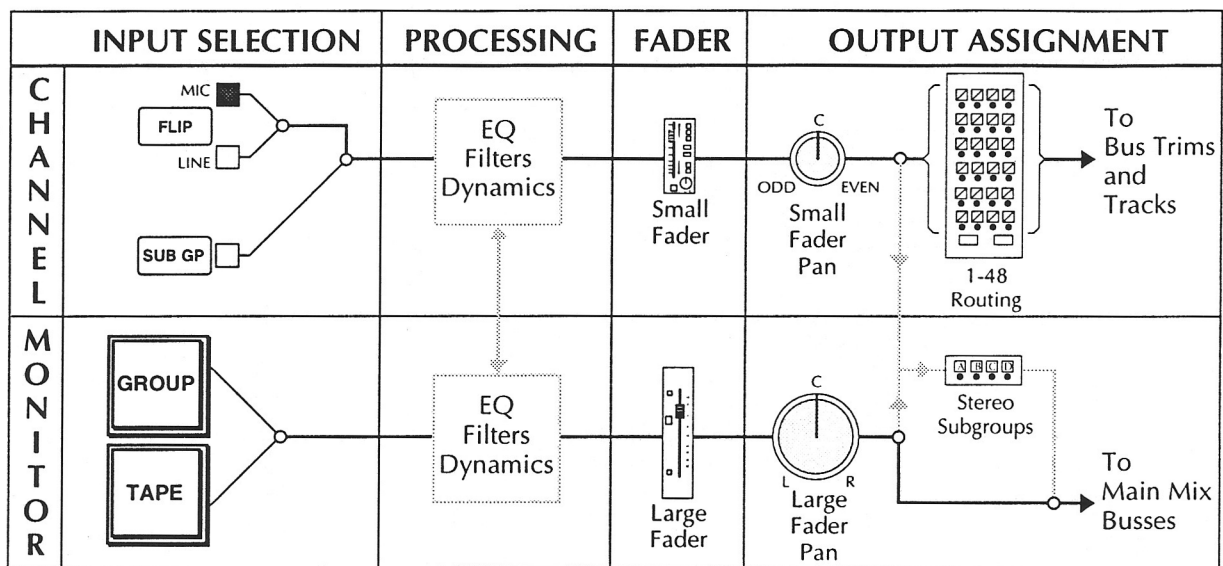
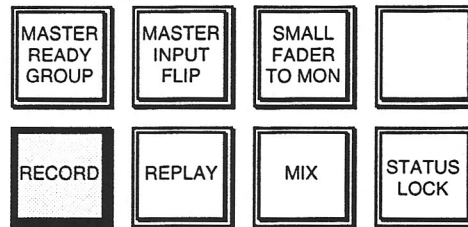
Normally these are selected to a default condition by the master status buttons on the SL952J but may be overridden locally when the situation dictates.

Also in this area are the **PRE** and **POST LF** buttons. These are mainly used in mixdown (as we shall see later) to source pre- and post-Large Fader channel signals when the Monitor path and Routing Matrix provide a method of setting up additional Aux/FX sends.

In order to explain the console routing system, we will go through the master statuses in the most logical progression, from basic track laying to final mixing. The status buttons are designed to differentiate between the various phases of the recording process.

Record Status

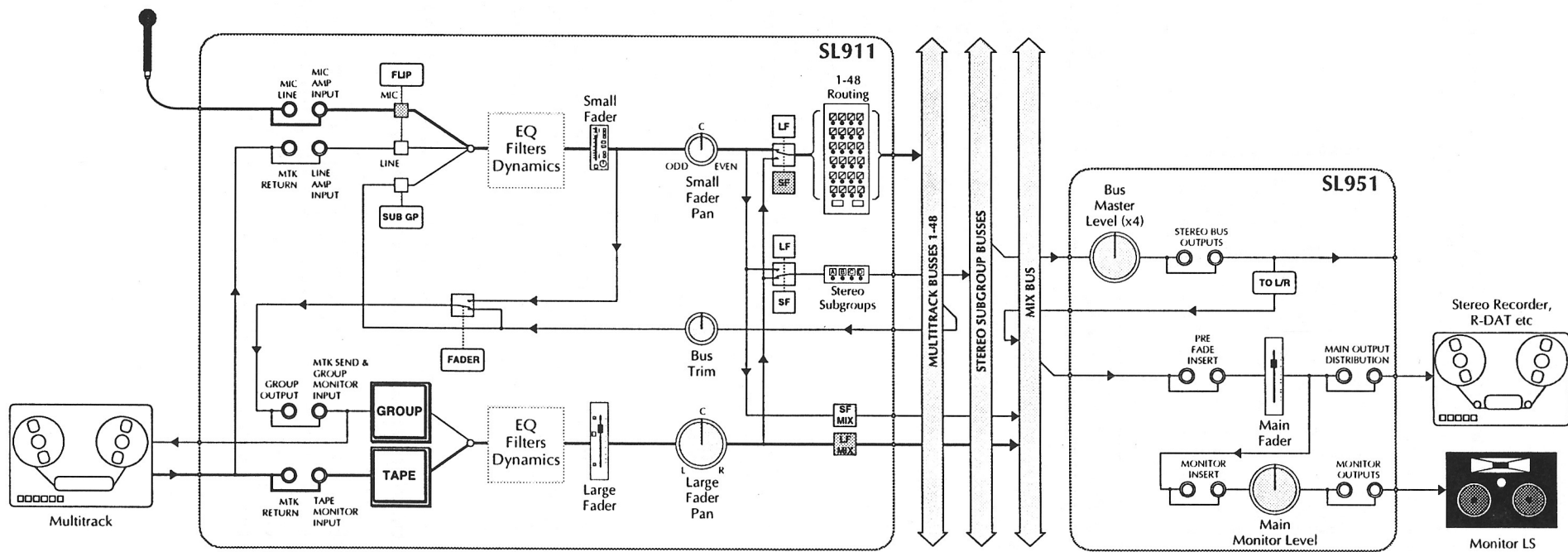
Recording basic tracks onto a blank multitrack tape is the starting point! In the record mode, with the **RECORD** status button selected, the various elements in the module signal paths are connected as shown below.



This will be the preferred recording mode for most engineers. If you have previously been using an SL4000 system, note that RECORD status on the SL9000 is equivalent to RECORD + VCA to MONITORS (FADER REVERSE on Ultimotion and G+ consoles) status.

The Large Faders are much more useful if used as monitor faders during recording, as they can, if required, be automated for end-of-the-day monitor mixes.

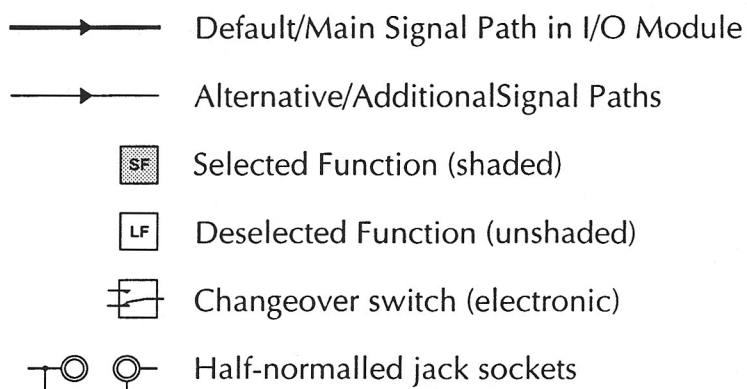
The upper section of the diagram shows the 'Channel' signal path whilst the lower part shows the 'Monitor' signal path. The Channel signal path is that path which originates from the Channel Input section of the I/O module. The Monitor signal is derived from the Monitor Input section.



Record Status

The drawing opposite shows RECORD status routing in more detail and will give you a good idea of where the various controls appear in the signal path.

Before we go any further, it would be worth explaining some of the elements in the drawings opposite and on the following pages. This will enable you to more easily understand the default signal paths and the variations available.

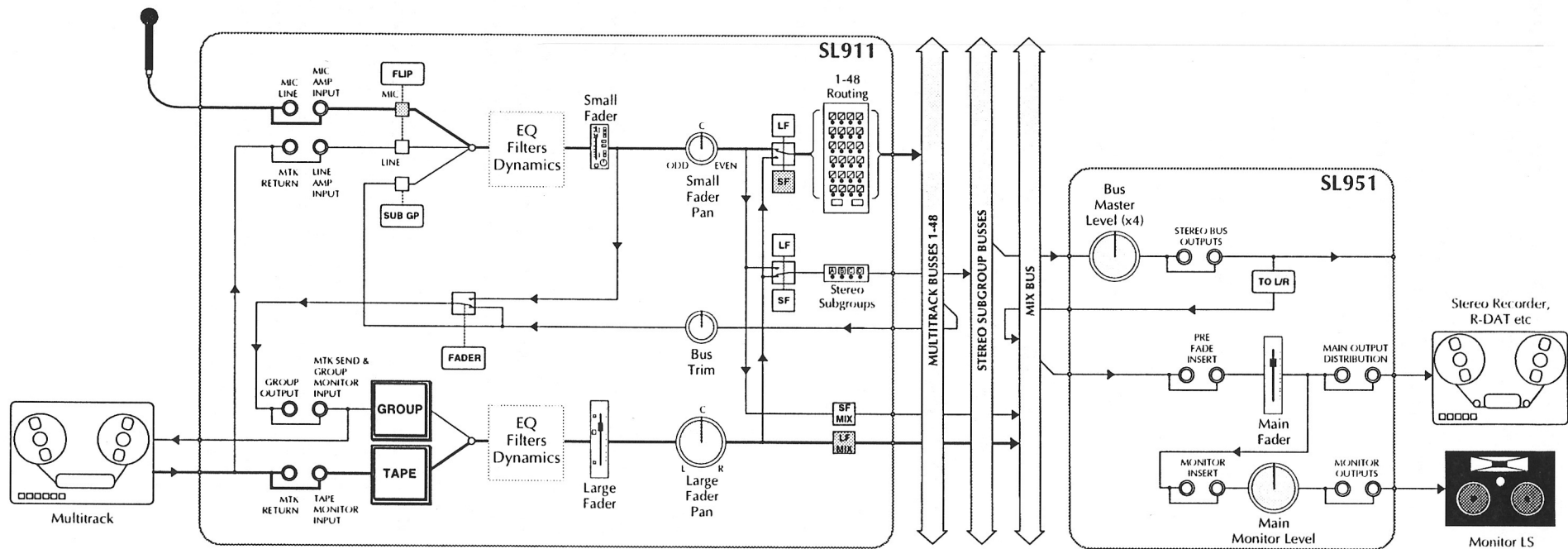


Note that most of the drawings are 'single-line' diagrams. This means that even stereo signal paths have been shown, for simplicity, as single lines. Just remember that the outputs of a pan control are always stereo, as are the Subgroup busses, main Mix bus and the Monitoring system.

Record Signal Flow Diagram

This diagram is fundamental to understanding the console signal flow, so it is worth while spending some time to look at it in detail. In this status, a Mic input is the standard selection and this signal will be fed, via the Mic gain control, to Channel path input. The **FLIP** button allows the Line input to be selected if you are sourcing from line level feeds rather than from microphones. The **SUB GP** (Subgroup) button overrides Mic and Line selections.

Normally the Subgroup button will be up and the Mic signal will pass to the phase reverse circuit (not shown). If **SUB GP** is pressed, the Channel signal path will derive its input from that module's multitrack bus (Group) mix amp. This allows signals from other modules to be subgrouped through the channel, which is a very powerful feature while mixing. In the tracking mode this could be used to provide overall Dynamics or EQ to a group of signals prior to sending them to the multitrack. For more on this function, see Page 2- 21 and Section 3.



Record Status

Following the input stage, the signal passes via the EQ and Dynamics sections (if selected) to the Small Fader. The Channel signal can also be fed via the insert points to an external device (not shown on the diagram) which can be switched pre or post the EQ.

After passing through the Small Fader and associated pan, the signal is sent to the Multitrack Routing Matrix, via the default selection of the associated **SF** (Small Fader) routing source button. When recording to a stereo pair of tracks, the Small Fader pan can be used to pan source signals between odd and even multitrack busses.

From the Routing Matrix the Channel signal passes on to the multitrack busses, to be picked up by the bus mix amp associated with that multitrack bus/Group. The Bus Trim may be on another module if the channel has been routed to a bus other than its own (which is usually the case). The signal then passes (via the **FADER** switch) on to the Group Output patch point on Row G, where it is normalled to the Multitrack Send and Group Monitor Input on Row H. The Multitrack Return appears on Row J and is normalled to the Tape Monitor Input (Row K).

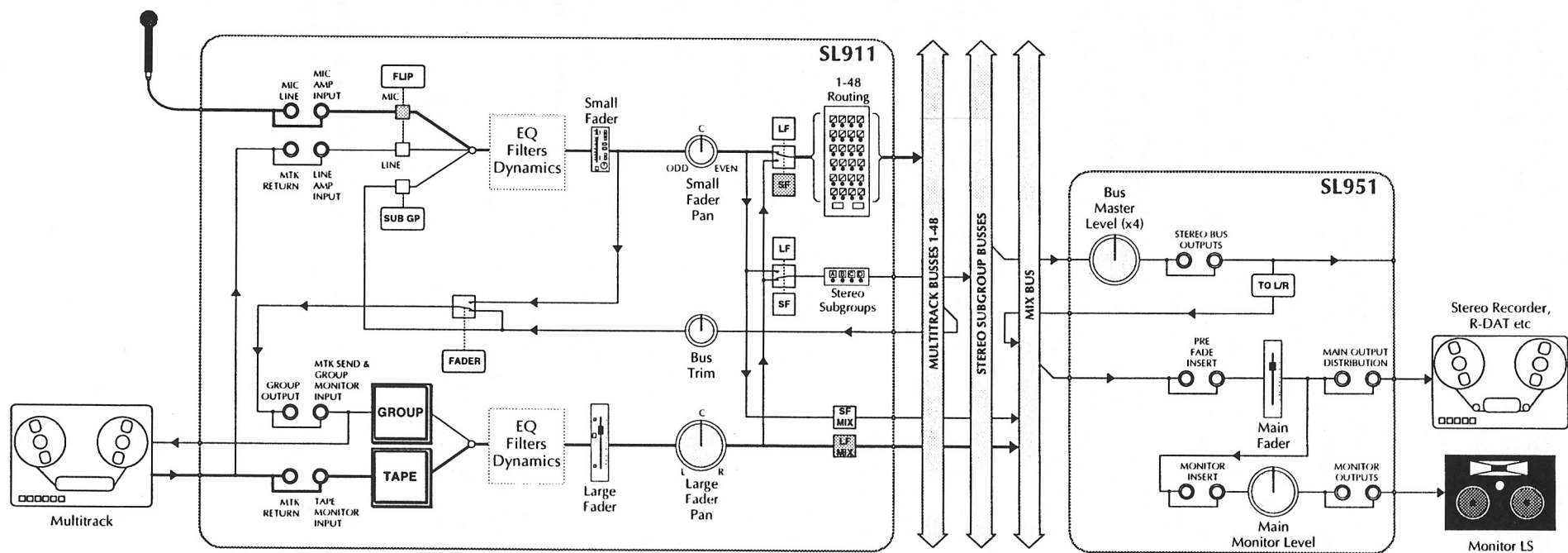
Both these Tape and Group Monitor signals feed a switching matrix which is controlled by the **GROUP** and **TAPE** buttons (see Section 3 for more details). Note that selection of **MASTER READY GROUP** on the SL952J selects all Monitor path inputs to **GROUP** automatically. This can be a useful starting point if you are recording to a large number of tracks simultaneously.

If required, the monitor signal can now be processed with the EQ and Dynamics sections (which can be switched into the Monitor or Channel signal paths, see Section 4). The signal passes on via the Large Fader and out of the module onto the Mix bus.

The Mix bus is fed into summing amps in the centre section and then passes via the Main Fader out to the monitor amps and ATRs.

Remember that, in **RECORD** status, the Large Faders relate to the monitoring of multitrack sends and returns, and the Small Faders relate to whatever source is being fed into that channel. Quite often these two signals may be completely different. For example, Track 7 may be fed from a mic plugged into Channel 1. The Small Fader on Channel 1 will control the level of that mic to the multitrack machine, the Large Fader on Channel 7 will control the level of Track 7 sends and returns as heard on the monitors.

Provision has been made for an analogue multitrack tape machine output to automatically switch to Sync whenever the **RECORD** status button is selected. This may, or may not, be wired in your studio.



Record Status

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From the diagram opposite you will see that, if required, the Large or Small Fader Pan outputs can be assigned to any one or more of the Stereo Subgroups. If you need to create audio subgroups of source signals, in order to apply overall signal processing, this can be very easily set up by using the Stereo Subgroups and outboard signal processors, or spare I/O modules (see Page 2- 25). For convenient level control, Monitor (Large in RECORD status) Faders can be assigned to the eight group control faders in the centre of the desk.

Track Bouncing

If you have previously been using an SL4000 desk, you will probably be familiar with the FLOAT function. Amongst other uses, this provided a simple method of setting up for track bouncing. The same effect can be just as easily obtained on the SL9000 but requires the selection/deselection of two switches.

As an example, say that we want to bounce Tracks 1, 2, 3 and 4 down to a stereo pair on Tracks 7 and 8, and we are still in RECORD status. First assign the Large Faders on Channels 1, 2, 3 and 4 to the Routing Matrix by selecting the associated **LF** button. Note that this toggles with the **SF** button. While in this area, select routing buttons 7 and 8 on each of these modules, having first ensured that the **1-24** routing bank switch is also selected.

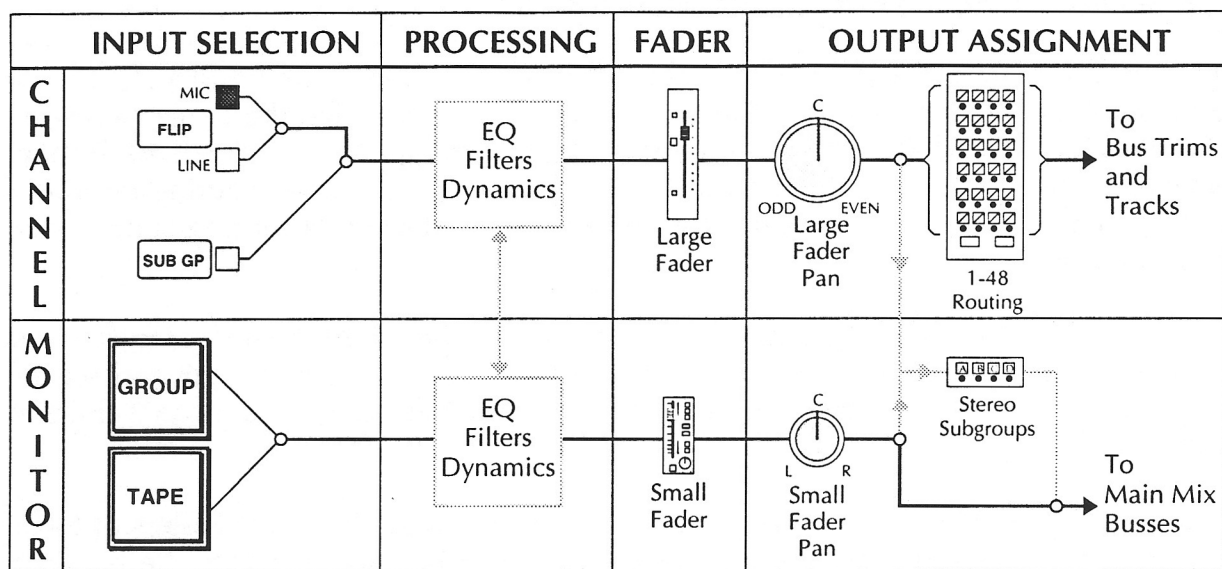
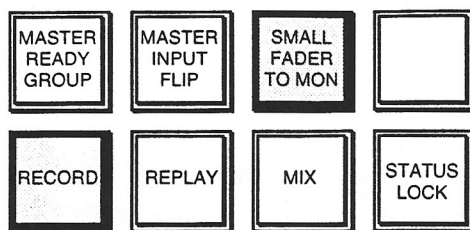
Now move to the foot of the module and deselect the **LF MIX** button to prevent 'double monitoring' during the bounce. Select **GROUP** on Channels 7&8 and set the Large Fader pans on these channels to left and right. Set the Large Faders on 7 and 8 to unity gain.

Run the tape and balance the mix of tracks 1-4 on the Large (Monitor) Faders of those channels. If not already set, the Large Fader pans can be used to create the required stereo image.

For more experienced SSL users, this may at first seem over-complicated. However, unlike the SL4000 Series, the Small Fader remains available while track bouncing, and panning across the multitrack busses follows the Large Fader pan control. Think, moreover, of the potential available when you can freely assign Small or Large Fader outputs to the Routing or main Mix busses in any console status.

Record + Small Fader To Monitor

RECORD + SMALL FADER TO MON(ITOR) status provides an alternative record mode to basic RECORD status. Selection of **SMALL FADER TO MON** simply swaps the faders in the Channel and Monitor paths, and can be used in conjunction with both RECORD and REPLAY status.



In this status, the Mic input is fed via the Large Fader and Pan to the Multitrack Routing Matrix (the 'Channel' signal path) and then to the multitrack itself via the module's Group mix amp and Trim control associated with that track of the machine (i.e. Track 7 is fed from Module 7's Group Output).

The Small Faders monitor the multitrack sends (GROUP) and returns (TAPE) and feed these signals to the main Mix outputs and monitoring of the desk, via the module's Small Fader pan (the 'Monitor' signal path), the Mix busses and the SL952J. Again, Track 7 will be monitored on Module 7's Small Fader.

This way of working is particularly suited where you need to handle a large number of sources simultaneously and want to have fader control of these as close to you as possible.

Some consoles may have local SMALL FADER TO MON buttons, allowing, for example, Channels 25-48 only to be switched to this mode. The Large Faders on these channels can then be used as input faders while the Large Faders on Channels 1-24 act as monitor faders. Note that SMALL FADER TO MON has no effect in MIX status.

Master Input Flip

This button works in any desk status and simply flips all channel inputs between Mic and Line inputs. Each channel can be flipped on an individual basis but it is simpler to hit MASTER INPUT FLIP to select the majority type of input. You would use this button if, for example, you are working in the RECORD status and wish to use Line inputs for synthesisers or samplers, rather than the Mic inputs.

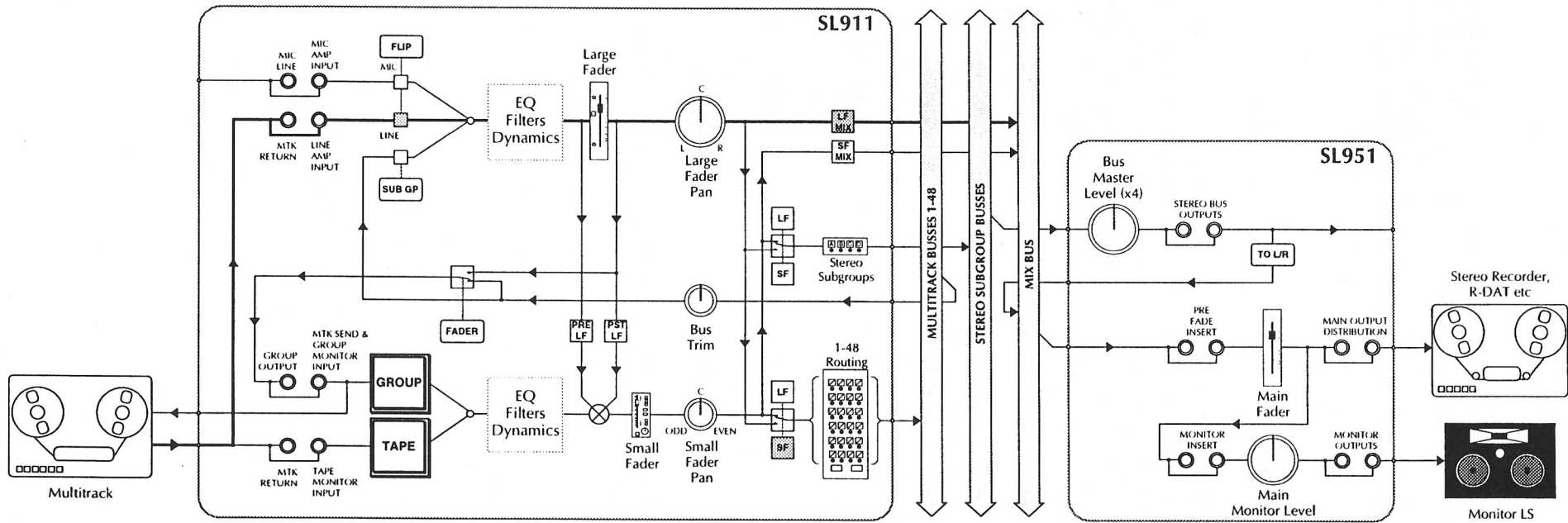
Replay Status

This mode is used when working in RECORD, or RECORD + SMALL FADER TO MON status. The current console status is put on 'standby' and the tape returns are automatically routed to the Monitor faders. This allows a quick replay of the tape without disrupting the console setup. If the Sync/Replay option is wired, then an analogue multitrack machine will be switched to normal Replay.

This status is useful during track laying. For example, when operating in RECORD status, the time will come when a quick monitor mix is required. This can be accomplished in RECORD status by deselecting any **GROUP** buttons, switching the multitrack machine to Replay manually, and mixing down the monitor inputs via the main output busses onto a stereo ATR. REPLAY status does all this with one button. Any **GROUP** selections are temporarily disabled and the monitor inputs pick up multitrack returns from the Replay head.

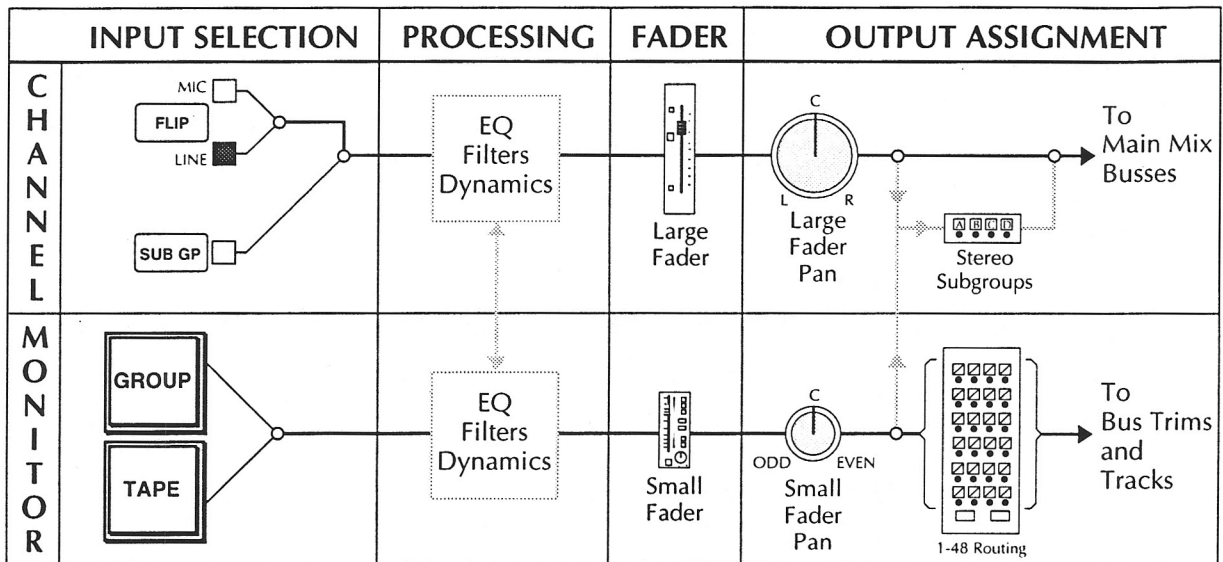
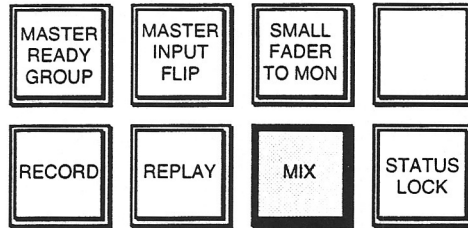
Reselecting RECORD status will reinstate all the previous **GROUP** and **TAPE** button selections, and an analogue multitrack will switch back to Sync, ready for more recording.

REPLAY status is also useful for playback over the Studio Loudspeakers, as RECORD status prevents the SLS outputs from receiving signal.



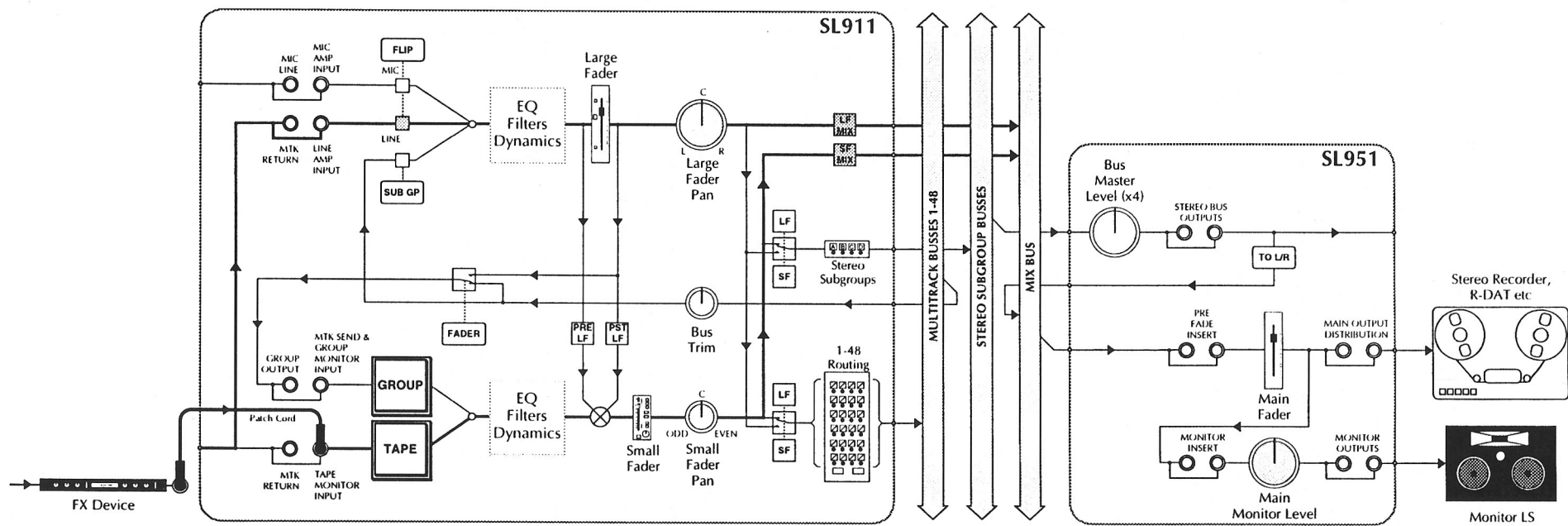
Mix Status

Mix Status



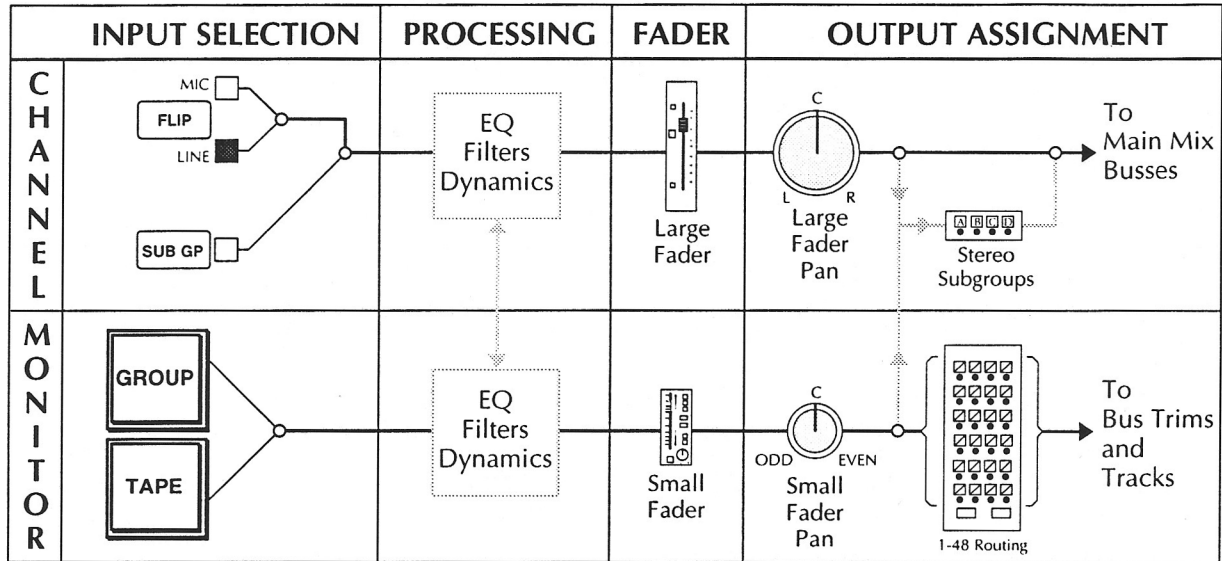
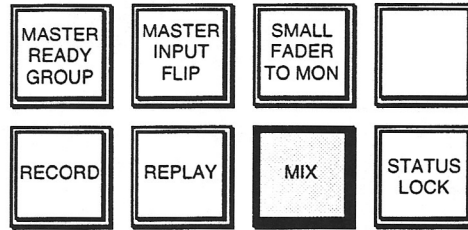
Line inputs are selected on the channels, sent via the Large Faders and Large Fader Pans to the main Mix bus and then, via the Master Fader on the SL 952, out to the mastering machine. The multitrack machine is usually normalled to the Line inputs, so this single status button will instantly set you up for a mixdown.

As described on the following pages, the Small Faders can be used for a variety of different purposes in MIX status. You will see from the drawings above and opposite that the default Monitor path in MIX status feeds the Tape Monitor Inputs via the Small Fader and Pan to the Multitrack Routing Matrix.



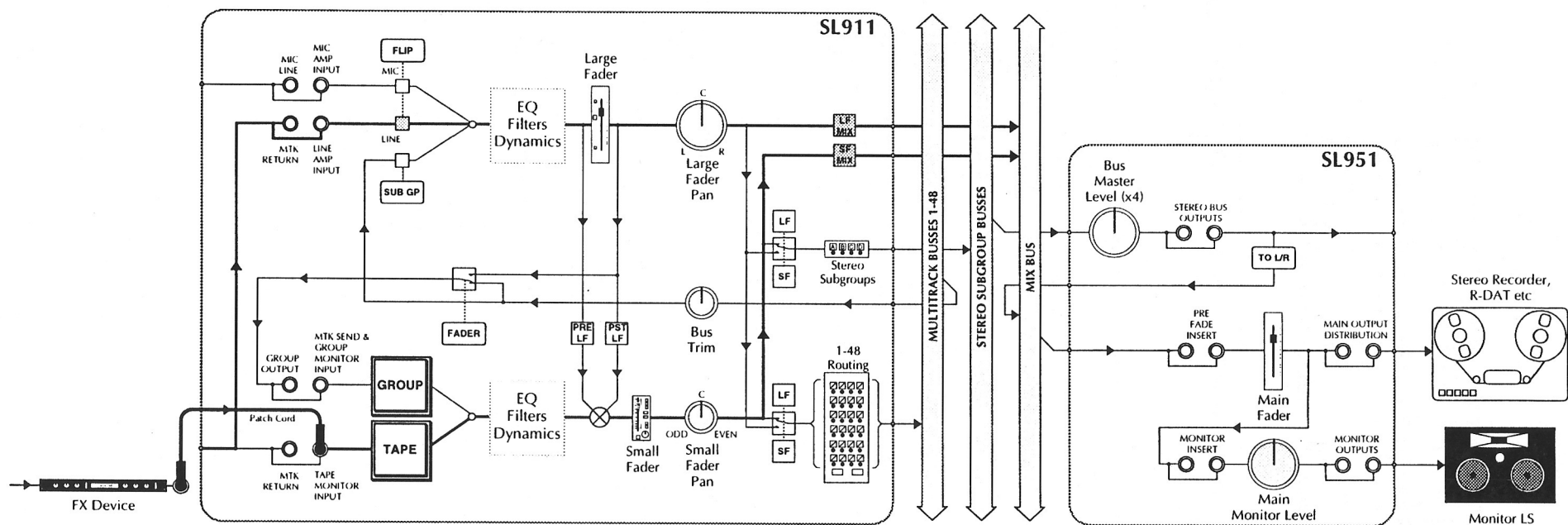
Small Faders as Inputs to the Mix

Mix Status



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Small Faders as Inputs to the Mix

The Small Faders

Learning how to use the Small Faders in various console statuses is the key to getting the most out of the SL9000 system.

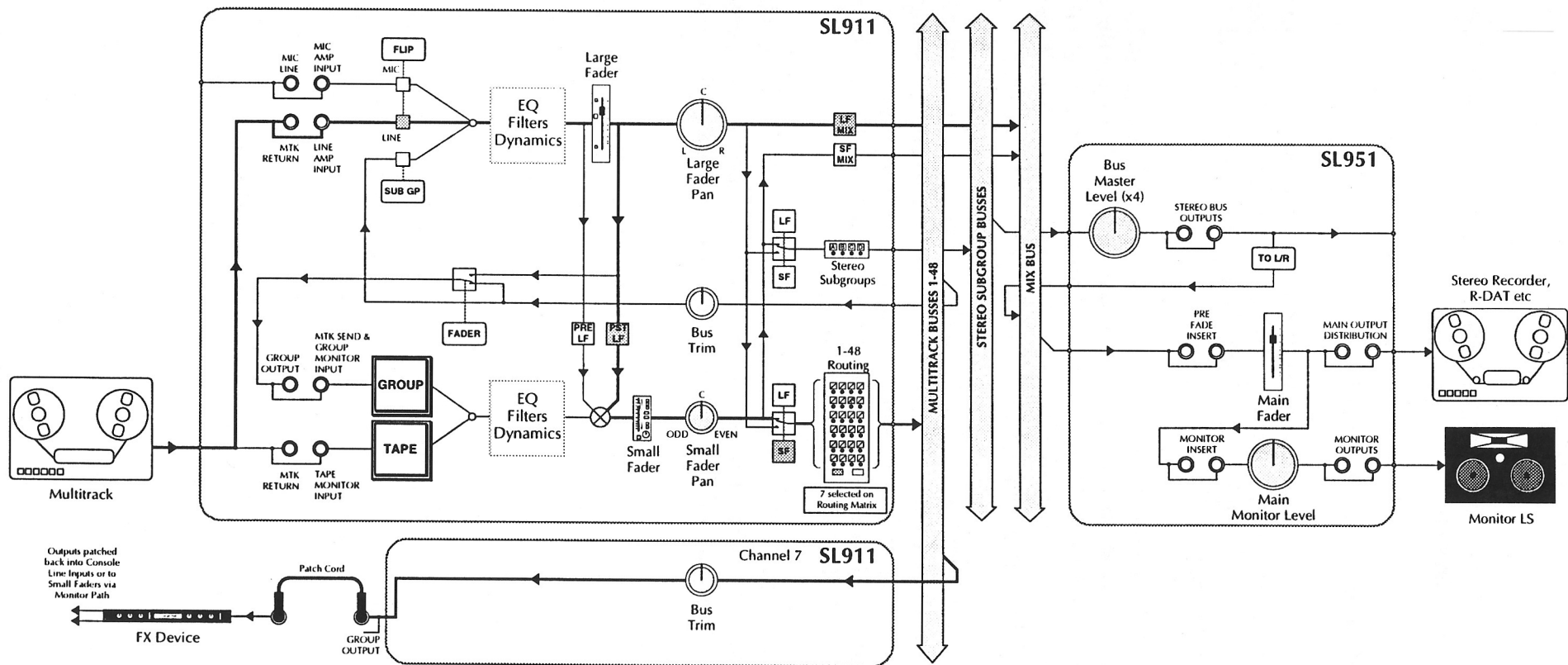
Small Faders as Additional Inputs to the Mix

By patching a line source into a Tape Monitor input jack on the patch, and with both **GROUP** and **TAPE** buttons deselected (ie. the Tape input default), this external signal will feed the Small Fader (see opposite). More information on **GROUP** and **TAPE** switching can be found in Section 3.

By selecting the **SF MIX** button (found on the upper right of the Small Fader), the Small Fader pan output will be added to the main mix. This instantly gives you double the number of inputs to the mix. For example, a 64 channel console can provide 128 inputs to the main outputs. As shown opposite, these Small Fader inputs provide an ideal way of returning multiple FX device outputs to the mix.

The Small Faders are automated on the SL9000, so level changes and cuts can be written to the mix data. Remember, however, that there is only one Dynamics and one EQ section per channel, so it is not possible to fully signal process every input. However, this facility allows smaller consoles to deal with the mega-mixdown situations which are becoming more and more frequent.

Note that the selection of **SF MIX** does not automatically deselect the Small Fader to Multitrack Routing Matrix switch (**SF** in the multitrack routing select buttons). This will not normally be a problem unless any routing buttons in the matrix are selected to undesired destinations.



Small Faders as Additional Aux Sends

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Small Faders as Additional Auxiliary Sends

In spite of being provided with six mono and one stereo Auxiliary/FX sends, there may be occasions, particularly in complex mixdown situations, where you need to be able to access large numbers of different FX devices. The SL9000 has an innovative auxiliary send reassign system which can provide up to 56 extra aux send busses. See Page 2- 25 for more details.

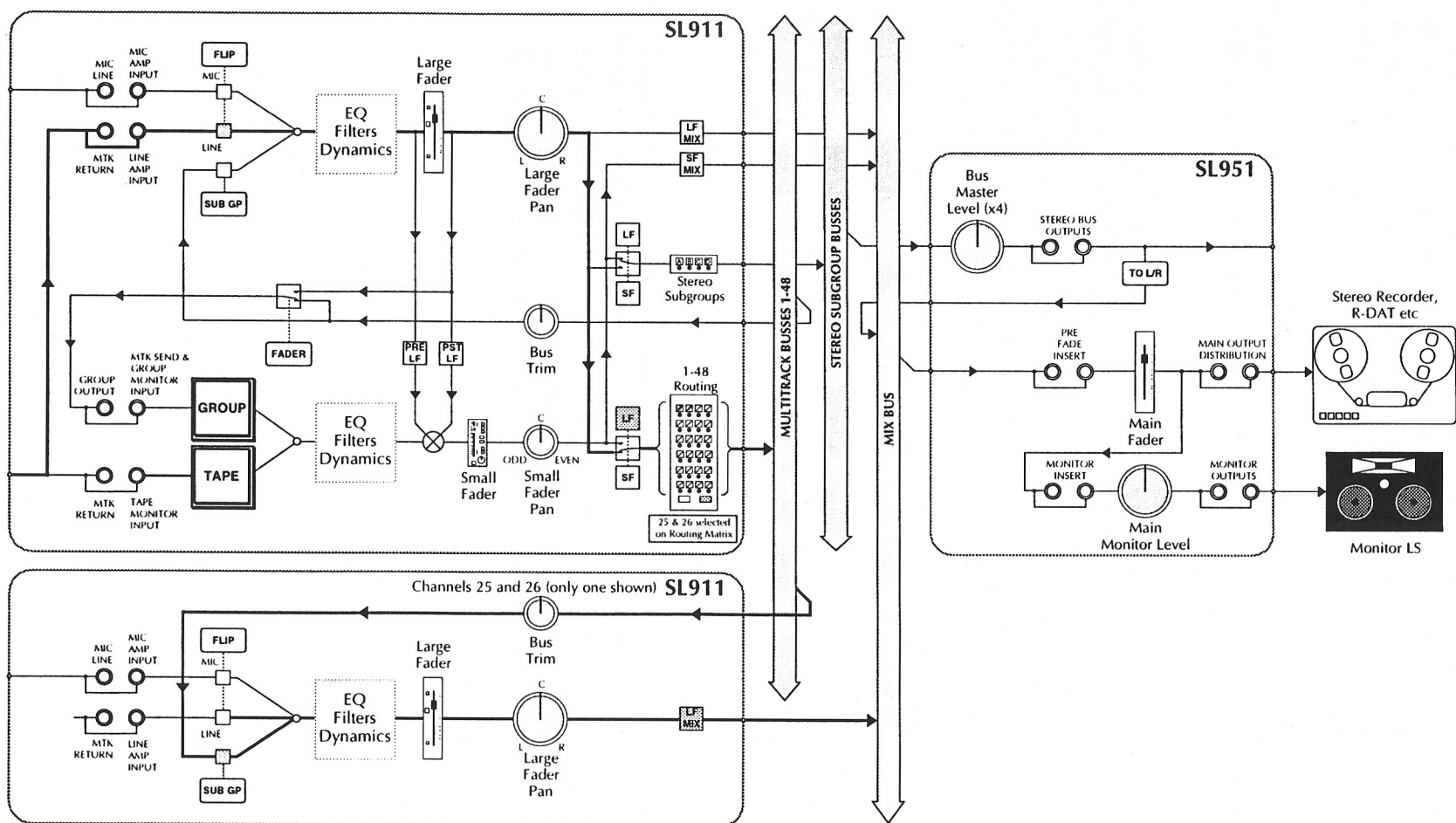
In addition, as those who have previously used an SL4000 will know, Small Faders and the Multitrack Routing Matrix can also be used to derive additional effects sends from each channel.

The channel signal can be picked up and fed to the Small Fader by selection of either the **PRE LF** or **P(O)ST LF** buttons (see opposite) which are located to the right of the Small Fader. In MIX status, the Small Fader pan feeds the Routing Matrix by default. Select an appropriate multitrack bus on the Routing Matrix which in turn will take the feed to the associated Group Output. Patching from there to the effects device input completes the chain. The level of this send can, of course, be automated.

Note that selection of **PRE LF** normally feeds a post-processing, pre-fader signal to the Small Fader; an internal link may be optionally set to derive this signal pre-processing.

When setting up for a mix, it's useful to patch from Group Outputs into the inputs of all the studio effects devices (apart from the primary reverbs and delays, which are usually fed from the dedicated sends). For example, you might patch delay lines to Groups 1, 2, 3, 4, extra reverbs to 5, 6, 7 etc.

Any channel can then access the input of the reverb connected to Group 7 via either the FX Reassign System (see Page 2-25) or by selecting the **PST LF** button (for a post-fader feed) and selecting 7 on the Routing Matrix. The send level will be controlled by the (automated) Small Fader. Where several channels are being fed to the same reverb, the overall send level can be controlled by the Bus Trim control on Module 7.



Large Faders Subgrouped to Large Faders

Subgrouping

When dealing with several channels of similar sources in a mix, eg. background vocals, it may be desirable to apply overall compression or other signal processing to a group of channels rather than to each individual source.

For level control alone, Large Faders can be subgrouped to one of the eight group control faders in the centre of the console. However, in order to apply overall signal processing to a group of sources, an audio subgroup must be set up. This can be achieved by routing signals to one of the Stereo Subgroups and inserting outboard processing at the Stereo Bus Output patch point (see opposite), before returning the subgroup back into the main mix (see also Page 2-27).

Alternatively spare I/O modules can be used to setup audio subgroups. This can be easily achieved without the use of patch cords, and in either stereo or mono. Say, for example, we have six backing vocal tracks returning on channels 43 to 48. Channels 25 and 26 are currently spare. By selecting the Large Fader to Multitrack Routing button (LF), the channel signal may be assigned to the Routing Matrix (see opposite). Select routing buttons 25 and 26 to feed a mix of these channels to Group Outputs 25 and 26.

If the **SUB GP** buttons on Channels 25 and 26 are now selected, the pre Group Output, post Bus Trim signals will be fed to the inputs of Channels 25 and 26. Pan the Large Faders on 25 and 26 left and right. The position of the source tracks in the stereo group can be set on the Large Fader pans of Channels 43 to 48. Overall processing can now be applied using the EQ and Dynamics sections of Channels 25 and 26.

If, instead of hitting the **SUB GP** buttons on channels 25 and 26, we select the **GROUP** buttons, the Small Faders will receive the grouped backing mix, as **GROUP** simply switches that module's Group Output to its Monitor fader. These two Small Faders can now contribute to the mix by pressing **SF MIX**.

By using Small Faders to act as audio subgroup masters, the Large Faders can still be used as normal, fed from the Channel path. Remember that, as with the use of Small Faders providing extra inputs to the mix described on Page 2-19, there will be a limit to the distribution of signal processing between the Small and Large Fader signal paths.

In fact it is possible to set up other variations on the above theme, i.e Small Fader to Large Fader and Small Fader to Small Fader subgroups. By the way, although we are describing all this in the MIX mode, the basic principles are exactly the same in the other desk statuses.

You can only route to the first 48 Groups via the Routing Matrix, but any channel above Channel 48 can be a subgroup master by patching from any of Group Outputs 1-48 into the Line Inputs (or Tape Monitor Inputs) of channels from 48 onwards.

Record + Mix Status (Overdub Mode)

This mode was designed for use in overdubbing but many engineers will use this status when laying basic tracks. Select this combined status by pressing the **RECORD** and **MIX** status buttons simultaneously.

The desk is basically in MIX status but an individual module may be put into the RECORD status, in order to record onto that track, if either the **TAPE** or the **GROUP** button is selected. The advantage of this mode is that the majority of modules will be in MIX status and you can mix with the Large Faders as if you were doing a final mix. In other words, the modules are not split into source signal paths and monitor signal paths unless you are recording from that module. You can work towards the final mix as you are tracking, using the mix capabilities to their full extent but with the ability to record onto the necessary tracks.

It is quite usual for the desk to be split for this way of working. The first 24 or 48 modules are dedicated to the multitrack, and modules upwards from 25 or 49 act as source channels, although this is not essential.

By way of an example, suppose you were overdubbing a vocal to several tracks at the very end of the recording process. You have four tracks free, 35 to 38. Select **RECORD** + **MIX** status and mix the rest of the tracks normally, as you would in basic MIX mode.

Plug the vocal mic into Channel 49, **FLIP** the input to Mic, and select **LF** to the Routing Matrix. Now deselect **LF MIX** on 49 to avoid feeding the mic direct to the Mix bus. By selecting routing button 35, the Large Fader on Channel 49 will feed the mic to Track 35.

Now select **GROUP** (and/or) **TAPE** on Module 35 to monitor the multitrack signal. This will put Module 35 into RECORD mode with the Large Fader monitoring the signal to the Mix bus. (the converse will be true with **SMALL FADER TO MON** also selected.)

Proceed with the overdub as if you were in basic RECORD status.

When you have completed the overdub, just deselect **GROUP** (and/or **TAPE**) on 35 and select **GROUP** (and/or **TAPE**) on 36 to continue recording onto Track 36. You will also need to select 36 on Module 49's Routing Matrix, unless all the overdub tracks have been preselected.

Just to add to the possibilities, you could carry out the same recording process in a slightly different way. Simply plug the mic to Channel 35 hit **GROUP** (and/or **TAPE**) to put 35 into RECORD mode. The Small Fader will feed the mic signal to the Routing Matrix, so select 35 and monitor the multitrack signal on the Large Fader using the **GROUP** and **TAPE** buttons.

The Fader Button

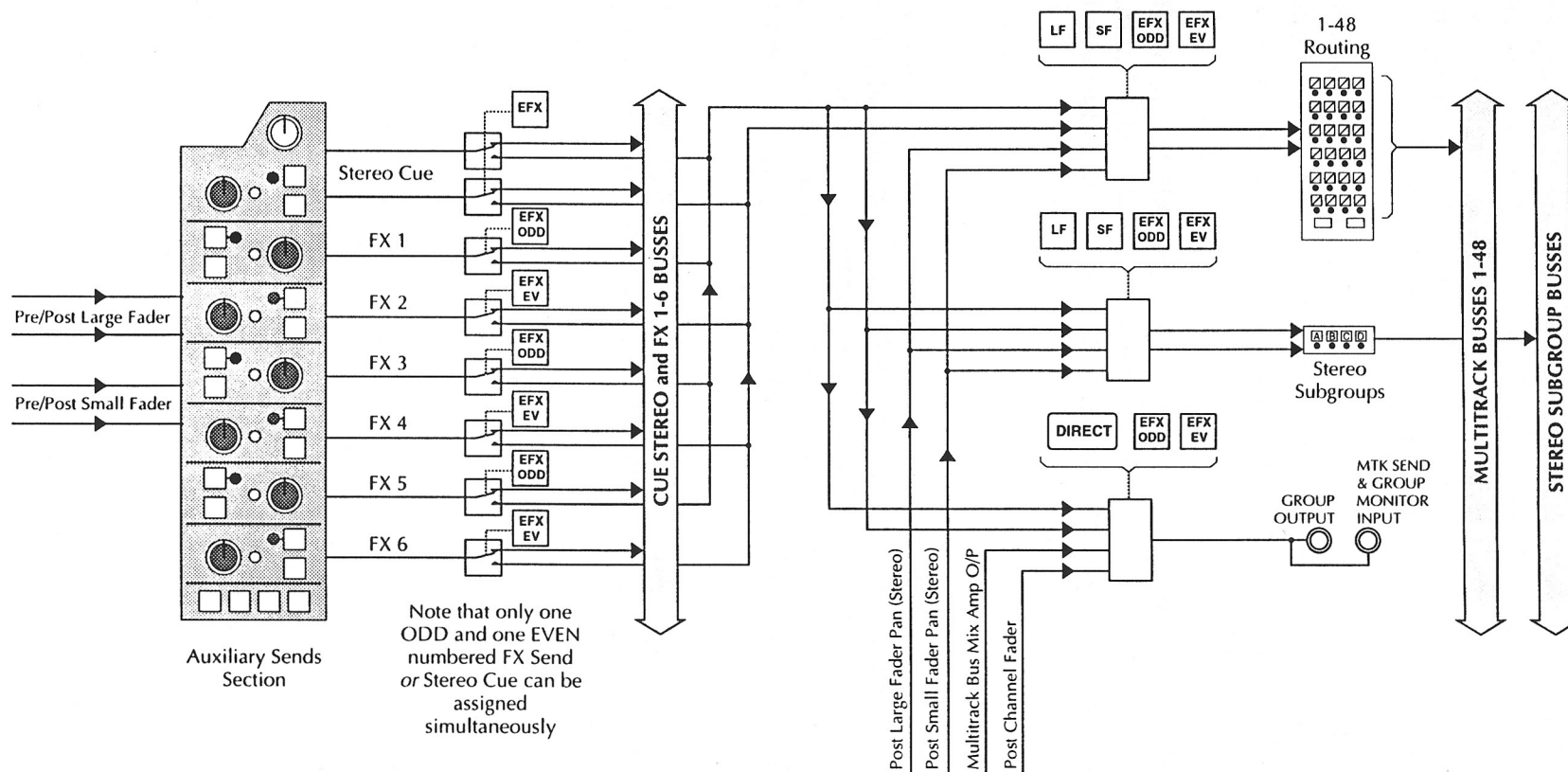
This leads us neatly into use of the **FADER** button. In the last example on the previous page, the Routing Matrix can be bypassed altogether by simply hitting **FADER**. This will send Channel 35's source mic, post-Small Fader, direct to Group 35 without going via the Routing Matrix. The benefit of this is that there will be fewer stages in the signal path. The disadvantage with this method of overdubbing is that you have to re-plug the mic each time you wish to move to another track.

Note that the **FADER** button on channels above Channel 48 can be used to feed post channel fader signals to the same numbered Group Outputs. These Group Outputs cannot, of course, be accessed via the Routing Matrix in the normal way. For more on the **FADER** button, see Section 3.

By the way, for analogue machines, the multitrack may be switched to the Replay head in MIX mode, if this facility has been wired; whenever the **RECORD** status button is selected, as in MIX + RECORD, the multitrack will be switched to the Sync head.

All this shows that there are many ways to carry out a particular task. If you are new to the system it may cause some confusion, but the whole philosophy behind the console is to provide alternatives and to allow an engineer, who knows the system well, some choice. A fixed routing path would be simpler to learn but would soon limit the engineer's ability to work quickly and get the best out of the equipment and the performer.

As you spend more and more time on the console, the many possibilities will start to become obvious and will allow you to work faster and with more options than any other system available.



FX ODD and FX EVEN Routing

FX Reassign System

An innovative feature of the SL9000 is its FX Send reassign system – EFX for short, which provides an extended auxiliary send capability of up to 56 extra busses without using the Small Fader as a level control.

The Auxiliary Sends section of each I/O module includes one stereo and 6 mono aux send controls. Auxes can be sourced from pre or post the Large or Small Fader. For more details on this, see Section 3.

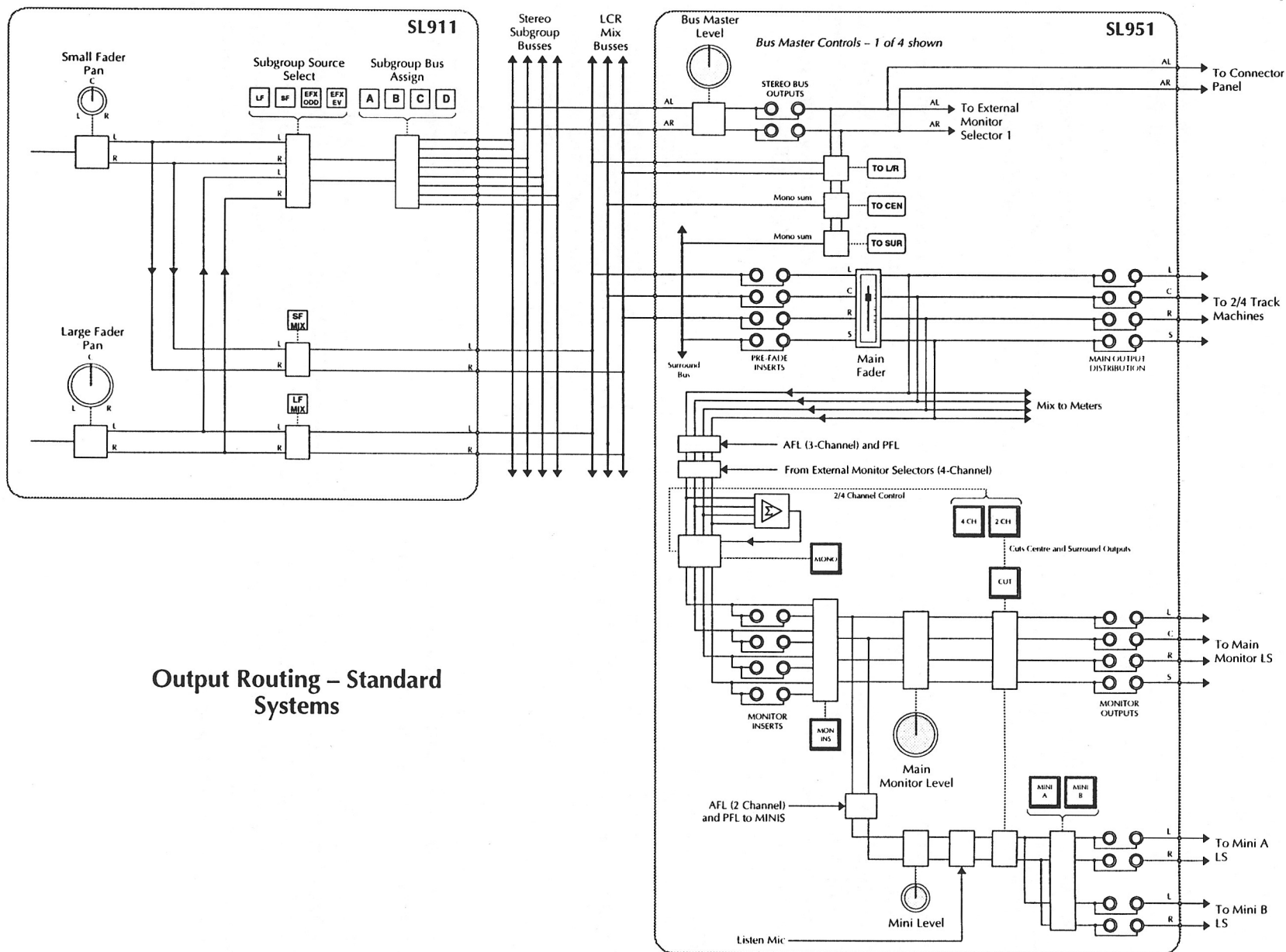
The reassign system allows any two mono FX sends, or the stereo cue send, to be disconnected from their respective busses and used as sources for the channel's Multitrack Routing Matrix, Stereo Subgroup bus routing and/or the channel's Group Output.

Aux sends are assigned to the EFX system using the **EFX** switches by each one. FX1, 3 and 5 can be assigned to **EFX ODD**. FX 2, 4 and 6 can be assigned to **EFX EVEN**. Selecting **EFX** on the Stereo Cue send feeds Stereo Cue L to EFX ODD and Stereo Cue R to EFX EVEN. Note that only one odd and one even numbered FX send or Stereo Cue can be assigned simultaneously. Lower numbered sends take priority over higher numbered ones, and Cue Stereo takes the highest priority. Red (EFX ODD) or green (EFX EVEN) LEDs indicate that a send is assigned to the EFX system.

The Multitrack Routing and Stereo Subgroup busses can be fed by Large or Small Fader (post pan control) signals, or by one or both of the EFX ODD/EVEN signals. If one EFX switch is selected, then the corresponding routing output will be fed in mono by the selected source. Selecting both switches together will feed EFX ODD to left (odd) and EFX EVEN to right (even) bus. This enables any two Aux Send controls to be re-routed to the Multitrack or Stereo busses, allowing large numbers of independent headphone or effects send mixes to be generated.

Connect FX device inputs to the appropriate Group Output jacks if sends are reassigned to the Multitrack Routing. In the case of Stereo Subgroups, connect devices to the appropriate Stereo Bus Output jacks.

The Group Output is normally fed by the multitrack bus Mix Amp, but this can be replaced with a post-fader channel signal by pressing **FADER**, or by the EFX ODD or EFX EVEN signals. Note that although Group Outputs above Channel 48 cannot be accessed via the Multitrack Routing Matrix, they can be accessed from the same numbered channel by selection of **EFX ODD** and **EFX EVEN** (or for a post channel fader signal, by **FADER**).



Output Routing – Standard Systems

So far in this section we have only talked about the console's main outputs and monitoring in general terms. Now we should look at this in a little more detail. For full information on all the console's centre section controls, see Section 5. If your console is fitted with the LCR pan option, please read this page and the additional information over the page.

Stereo post-Large and Small Fader signals can be freely assigned to the Multitrack busses, the Stereo Subgroup busses and the main Mix busses. As standard, the console is fitted with LCR Mix busses (see opposite), but the Centre bus cannot be accessed directly from channels unless the LCR pan option is fitted (see over the page).

Stereo Subgroups

Signals assigned to the Subgroup busses, if being used for stereo stem mixes, can simply exit the console either via the connector panel or by patching out of the Stereo Bus output sockets on the patch. Your installation may have a multitrack layback machine normalled to these outputs.

In addition, Subgroup signals can be reassigned back, post insert point, onto the main Mix busses by selection of the **TO L/R**, **TO CEN(TRE)** or **TO SUR(ROUND)**. Note that the latter two functions feed a mono sum of Left and Right Subgroup bus signals to the respective main Mix busses, and that the Surround mix bus is internal to the centre section.

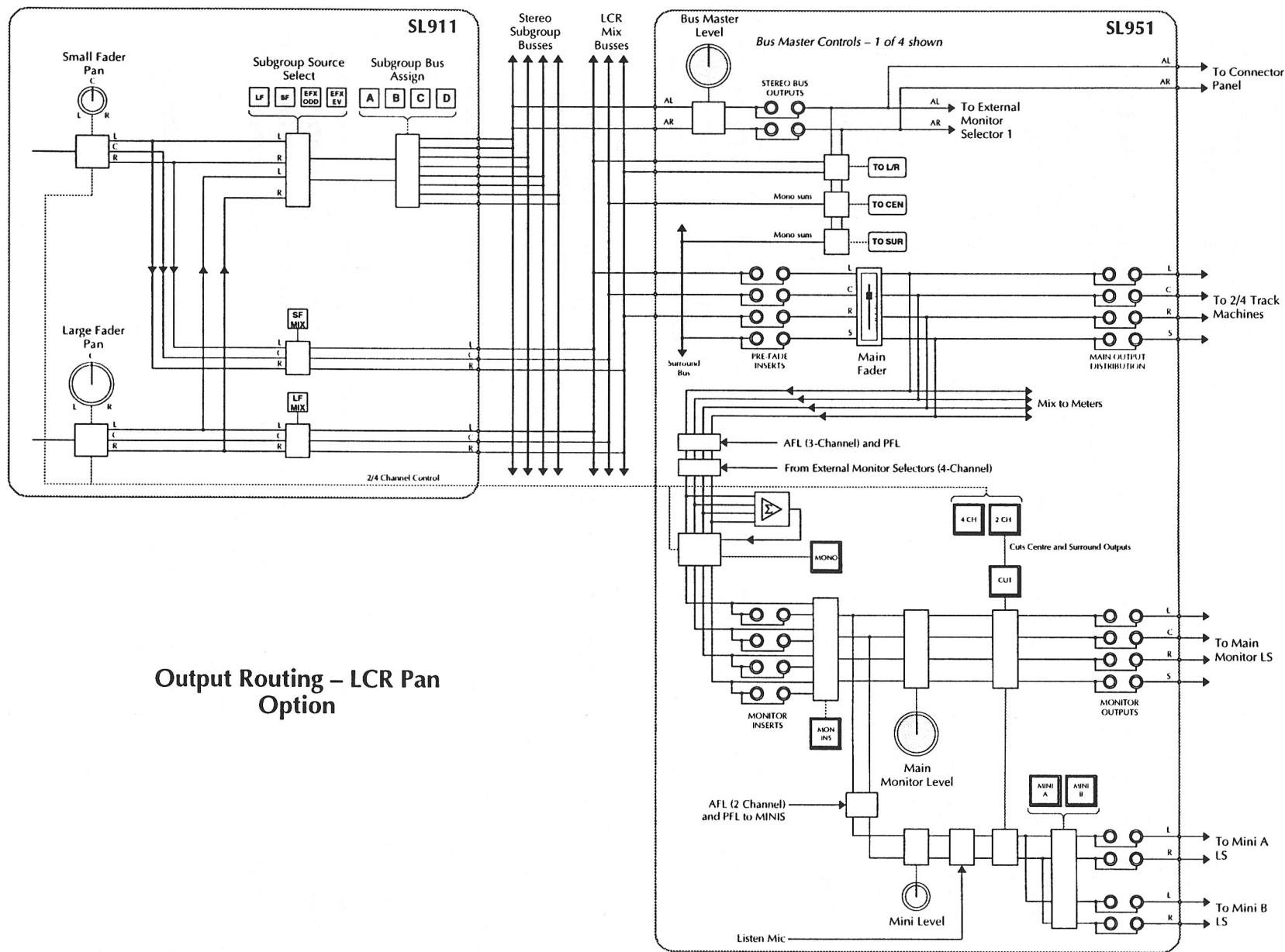
Using the functions described above, with two of the Subgroup busses dedicated to Centre and Surround mix paths, LCRS film or video mixes can be simply generated even if the console is not fitted with the LCR pan option.

The Stereo Subgroup bus outputs can be monitored on External Source Selector 1. See Section 5 for more details.

Main Outputs

Signals on the main LCRS busses pass via a pre-fader insert point before reaching the console's master (4-channel), VCA automated, fader. At this point the centre section's 4-channel Compressor (not shown in the diagram) can be switched in to control main output levels. This compressor is the classic SSL 'Quad' compressor, which will be well known to experienced SL4000 users.

The desk's main outputs are normalled to a series of Distribution jacks which, in turn, may be normalled to three 4-track and nine stereo machines.



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Monitoring

Feeds to the desk's monitoring facilities are picked up post the Main Fader and Compressor. This point also feeds the main output meters when selected to **DESK OUTPUT**.

Following the injection of AFL, PFL and Solo-In-Front signals, the monitor feeds can also be interrupted by source selections from the two External Source Selectors (more on this in Section 5). **MONO** sums all four monitor busses and feeds the result equally to Left and Right monitor outputs or to the Centre output, subject to the selection of the **2 CH** or **4 CH** switches. Selecting **2 CH** also mutes the Centre and Surround monitor outputs.

A switchable Monitor Insert point is provided for the connection of Dolby Surround Encoders/Decoders.

Level controls are provided for both the Main and two pairs of Mini (near-field) loudspeakers. Inputs from two 'Listen Mic' circuits are fed to the Mini 'A' LS outputs. AFL, PFL and Solo-In-Front are also fed to the Mini 'A' LS outputs if **A/PFL TO MINIS** is selected. Note that this selection leaves the desk output on the Main monitors and the AFL/PFL level control is inactive.

Output Routing with LCR Pan Option

When the LCR pan option is fitted, the Centre Mix bus can be fed directly from the channels (see opposite). Selection of **2 CH** or **4 CH** in the centre section determines whether both Small and Large Fader pans will pan between Left and Right with a 'phantom' centre or from Left, through Centre, to Right. When selected to 4-Channel mode, the pans will still pan between odd/left and even/right Multitrack or Stereo Subgroup busses.

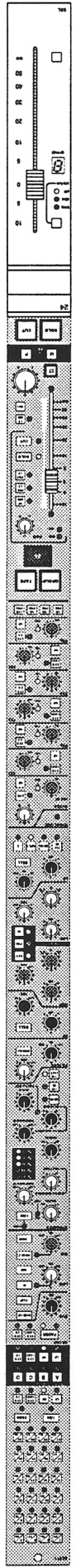
Apart from this simple but extremely useful and convenient function, the desk's main output and monitoring signal paths and facilities are as described above for standard systems.

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SECTION 3

The SL911 Input/Output Module



The SL911 Input/Output Module

The I/O module has two independent signal paths. Each path has its own input and fader. The module automatically powers up in a standard output routing configuration determined by the master desk status. The output routing, however, can be over-ridden locally at any time, to provide extra flexibility of operation.

The two inputs are the CHANNEL INPUT and the MONITOR input.

The two faders are the LARGE FADER and the SMALL FADER (LF and SF for short). Each fader has an associated pan control.

The path fed by the Channel Mic/Line Input stage is designated the 'CHANNEL' path. The path fed by the Tape/Group Monitor Input is designated the 'MONITOR' path.

The module's outputs are the main Stereo/LCR bus, the 48-track Routing Matrix at the top of the module, the four Stereo Subgroup busses A, B, C and D (immediately below the Multitrack Routing Matrix) and the channel Group Output.

Either or both faders can feed the main Stereo bus ('Mix').

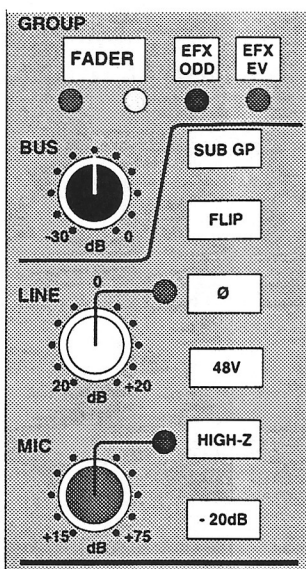
Either fader can feed the Multitrack Routing Matrix and Stereo Subgroup busses or the Group Output.

On channels 1-48, the Group Output can also be fed by the multitrack mix bus corresponding to that channel.

The Multitrack and Stereo Subgroup busses can also be fed by any of the Auxiliary send controls, allowing additional effects sends or cue mixes to be generated.

EQ, Filters, Dynamics and Aux send controls can be switched into either signal path.

Obviously there are many possible permutations of signal routing, allowing an enormous number of creative possibilities. This section looks at each control on the SL911 module individually, with a brief summary of the routing possibilities. Section 2 describes these in more detail.



Channel Input Section

The channel input can receive any one of three inputs:

LINE – Selects a Line level input from patch row D via the LINE trim pot (+20dB to -20dB). The pot is indented at unity gain. A green LED indicates Line Input selection.

MIC – selects a Microphone input from Patch row B via the MIC trim control.. This is continuously variable from +15db to +75dB of gain, with a 20dB pad switch shifting the gain range to -5dB to +55dB. A red LED indicates Mic Input selection.

SUB GP – When this button is pressed, the above selections are overridden and the input of the channel is taken from that module's multitrack bus mix amp. This allows modules 1-48 to be used to as audio subgroups.

FLIP – This reverses the mic/line selection on individual channels.

Ø (Phase) – This reverses the phase of the selected channel input.

48V – When selected provides phantom power to the associated microphone.

HIGH-Z – Increase the input impedance of the microphone input from 1.2K Ω to 8K Ω . This allows the connection of line level outputs to the mic input if required, and provides an alternative input impedance for some dynamic microphones.

MIC or **LINE** inputs are automatically selected by the STATUS switches on the SL952 Master Facilities Module. In RECORD or REPLAY status, all inputs switch to MIC. In MIX, all inputs switch to LINE. The FLIP button reverses the input selection on individual channels. The MASTER INPUT FLIP button on the SL952 panel reverses the input selection on all channels.



Dynamics Section

The Dynamics section comprises a compressor/limiter and an expander/gate, which use the same gain change element. Both sections work independently, but can be operational at the same time, providing sophisticated control of either the Channel or Monitor signal.

The Dynamics section has three routing buttons associated with it. Section 4 deals with Dynamics routing in more detail, but briefly these button function as follows:

MON – switches the Dynamics section into the Monitor path (Post EQ if the EQ has also been selected to the Monitor path).

CH IN – Switches the Dynamics section into the Channel audio path PRE EQ.

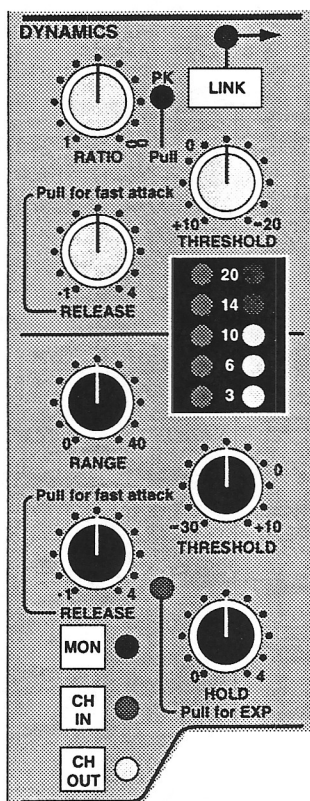
CH OUT – switches the Dynamics section into the Channel audio path POST EQ.

If both the **CH IN** (or **CH OUT**) and the **MON** buttons are selected, then the Dynamics section is switched to the Channel path but the Dynamics' side chain is fed from the Monitor path, post TAPE/GROUP selection. See Section 4 for more details. This allows the Dynamics to be keyed via either a multitrack bus or the patch bay.

The Channel Insert Return can also be used as a key input via the Insert **KEY** switch. See more on this under Insert Point on Page 3-8.

Compressor/Limiter

RATIO – When turned to 1:1 the Compressor/Limiter section is inactive. Turning the control clockwise increases the compression ratio to give a true limiter at the fully clockwise position. The compressor normally has an 'over-easy' characteristic. Pulling the **RATIO** switch up changes this to peak sensing, and replaces the 'over easy' characteristic with a hard knee, providing an alternative for some instruments. The **PK** LED lights to indicate that this option has been selected.



THRESHOLD – Whenever a signal exceeds the level set by this control, the compressor will start to act at the ratio set by the **RATIO** control. This control also provides automatic make-up gain, so as you lower the threshold and introduce more compression, the output level is increased, maintaining a steady output level regardless of the amount of compression.

RELEASE – Sets the time constant (speed) with which the compressor returns to normal gain settings once the signal has passed its maximum. The control also incorporates a pull switch which, when selected, provides a fast attack time (3mS for 20dB gain reduction). When down the attack time is program dependent (3mS - 30mS).

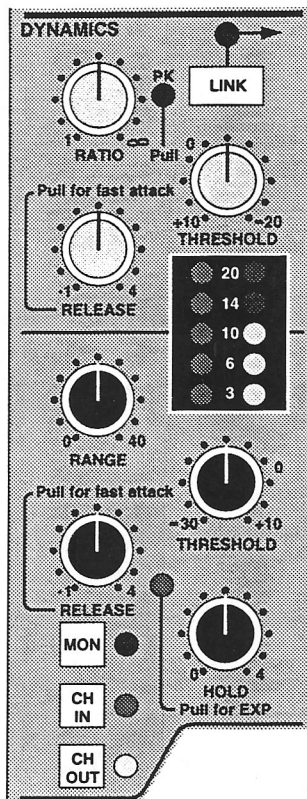
The yellow and red LEDs, on the right of the LED display area, indicate the amount of gain reduction (compression).

Expander/Gate

This section can act as a $\infty:1$ Gate or as a 2:1 Expander when the **HOLD** pot is pulled upwards. A red LED indicates that Expand mode has been selected.

RANGE – Determines the depth of Gating or Expansion. When turned fully anti-clockwise (Range = 0), this section is inactive. When turned fully clockwise, a Range of 50dB can be obtained.

THRESHOLD – Variable hysteresis is incorporated in the Threshold circuitry. For any given 'open' setting, the Expander/Gate will have a lower 'close' threshold. The hysteresis value is increased as the Threshold is lowered. This is very useful in music recording as it allows instruments to decay below the open threshold before Gating or Expansion takes place.



RELEASE – This determines the time constant (speed), variable from 0.1 - 4 seconds, at which the Gate/Expander reduces the signal level once it has passed below the threshold. This control also incorporates a switch which, when pulled up, provides a fast attack time (100µs per 40db). When down, a controlled linear attack time of 1.5ms per 40dB is selected. The attack time is the time taken for the Expander/Gate to 'recover' once the signal is above the threshold. When gating signals with a steep rising edge, such as drums, a slow attack may effectively mask the initial *THWACK*, so you should be aware of this when selecting the appropriate attack time.

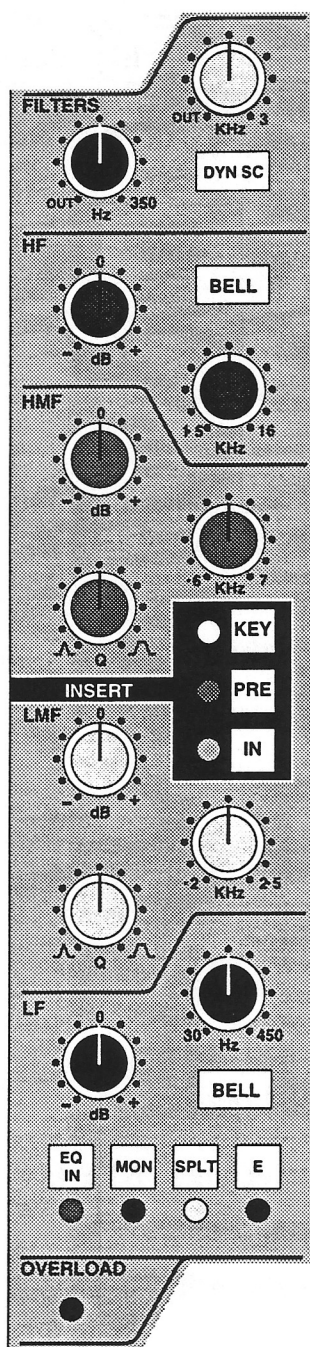
HOLD – Determines the time after the signal has decayed below the threshold before the gate closes. Variable from 0 to 4 seconds. A pull switch on this control switches the section from gate to expand operation.

The green LEDs indicate Expander/Gate activity (the amount of gain reduction).

The **LINK** button at the top of the section links the side chain signal of that unit to the side chain of the next Dynamics section along to the right. When two Dynamics sections are linked, the control voltages of each section sum together, so that whichever section has the most gain reduction will control the other section.

Note that it is not possible to link two gates so that the signal on one opens the other. If you need to achieve this effect, take a keying signal from one section to trigger the other. The easiest way to do this is by patching from the Insert Send of the 'source' channel into the Insert Return of the 'destination' channel, and selecting **KEY** (see Page 3-8) on this channel.

Note that when the Dynamics section is not in circuit, its side chain input is also bypassed.



Filters and Parametric Equaliser Section

This section comprises a four band parametric Equaliser plus High and Low pass Filters. The EQ and Filters can be routed separately to different audio paths within the module.

Routing Buttons

There are four routing buttons associated with this section of the module. Section 4 describes the routing combinations in more detail but, briefly, these buttons function as described below.

EQ IN – Switches the section into circuit. If no other switches are pressed, the Equaliser is in the Channel path and the Filters are *post* the Equaliser. This switch is automated – see the J Series Computer Operator's Manual for more details.

DYN SC – The Filters are switched into the side chain of the Dynamics section. The Equaliser can be switched into the Channel or Monitor path independently. Note that **DYN SC** overrides the **SPLT** function (see below).

MON – The section is switched into the Monitor audio path. The Filters are *post* the Equaliser. Note that **EQ IN** must also be selected for the section to be active. The section is *pre* the Dynamics section if this has also been selected to the Monitor audio path.

SPLT – Can be operated in combination with the above selections and splits off the Filters to put them in circuit immediately after the Channel Input section.

This allows the Filters to be used in channels feeding the multitrack while in RECORD status, with the Equaliser being used on the monitors only. This is also useful in the MIX mode, when additional inputs are being brought into the mix via the Small Faders. The Filters can be used on the signal passing through the channel via the Large Fader, and the Equaliser used on the signal being fed via the Monitor Input and the Small Fader.

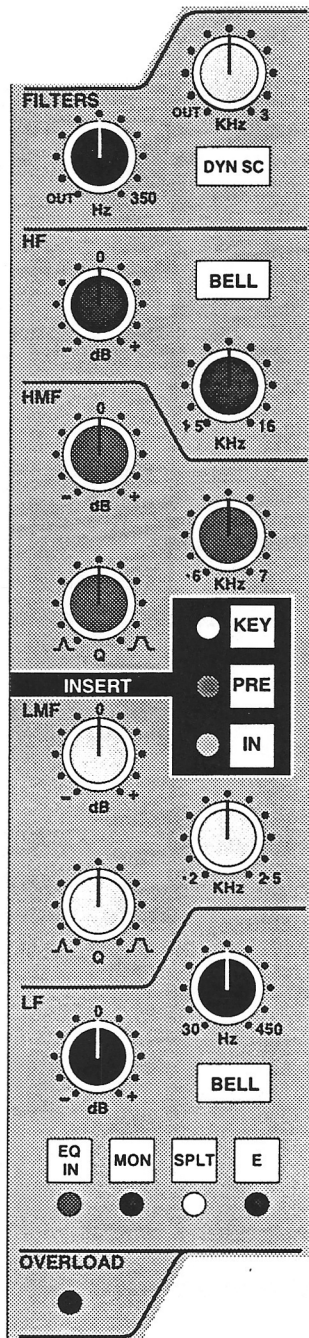
As with the Dynamics section, the Equaliser is completely bypassed when none of its routing buttons are pressed.

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SECTION 1

Console Overview



Parametric Equaliser

The equaliser can be switched between two different sets of curves, one based on the G Series equaliser and one based on the latest version of the classic E Series EQ.

HF Section:

Comprises a shelving filter with variable cutoff frequency and a boost/cut control. This is switchable to a shallower curve by selecting the 'E' switch. Selecting **BELL** in either mode switches the filter to a peaking curve.

HMF Section:

Continuously variable Q (filter width), gain (± 20 dB) and centre frequency controls (600Hz-7kHz).

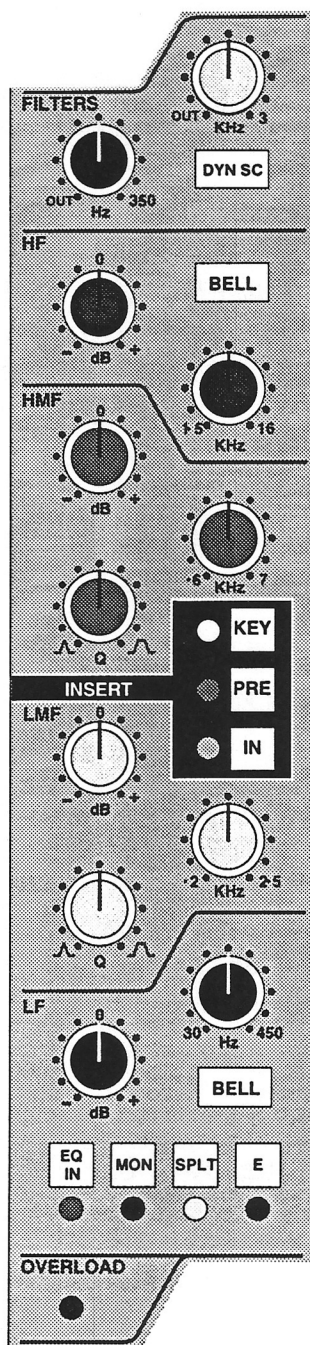
LMF Section:

Continuously variable Q (filter width), gain (± 20 dB) and centre frequency (200Hz to 2.5kHz) controls.

In normal operation, the HMF and LMF bands of the equaliser have continuously variable bandwidth (Q). This is calculated as the ratio of gain/bandwidth so that as the gain is decreased the bandwidth increases. When the equaliser is switched to 'E' operation, the bandwidth remains constant at all gains, so at lower gains the EQ curves are narrower for a given Q setting.

LF Section:

Comprises a shelving filter with variable cutoff frequency and boost/cut control. This is switchable to a shallower curve by selecting the 'E' switch. Selecting **BELL** in either mode switches the filter to a peaking curve.



Filters

The Filters can be completely bypassed when the controls are turned fully anti-clockwise to the detented OUT position.

The High pass filter has a slope of 18dB per Octave and the Low pass filter has a slope of 12dB per octave.

Overload Indicator

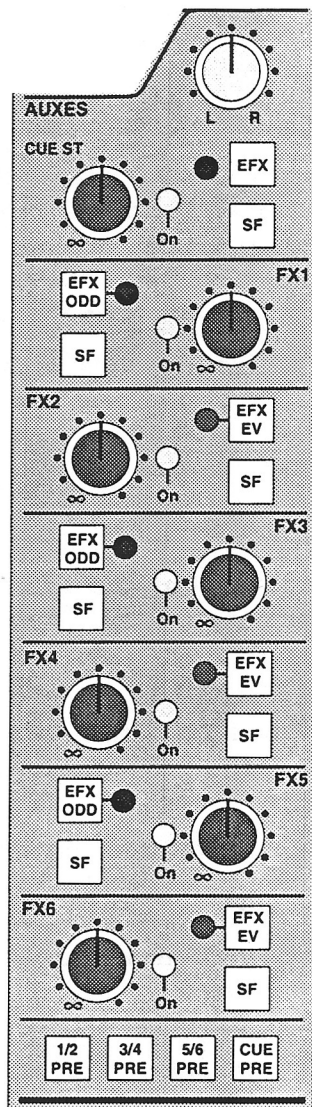
The overload circuit monitors the signal in the Channel path at three different points. The level at which it lights can be adjusted from the centre section between +18dBu and +24dBu in 1dB steps. (See the SL9000J Service Manual for more details.) The monitor points are: post-channel fader, post-insert point and channel input pre any signal processing.

Insert Point

The insert point is switchable **PRE** or (normally) post the EQ and before the fader. The Insert Send jack (Row E) always carries the channel signal and is normalled down to the Insert Return jack (Row F). The **IN** button switches the return back into the signal path, hence switching in any device patched to the insert jacks.

The insert **IN** button is automated. See the J Series Computer Operator's manual for more details.

The Insert Return can also be used as a key input to the dynamics. Selecting **KEY** re-routes the insert return to feed the dynamics side chain. See also Dynamics Section, Page 3-3.



Auxiliary Sends

This section comprises one stereo and six mono sends. Either audio path, controlled by the Large or Small Fader within each module, may be routed to any of the send busses, in any pre or post-fader permutation.

Each send has a level control with a built-in push-on/push-off switch so that levels may be preset and easily switched in and out. These switches are automated and the On/Off switching is electronically latched. A yellow LED indicates that the send is ON. The stereo send also has a pan control.

The source select buttons for each send are:

SF (SMALL FADER) – When pushed down the send is derived from the Small Fader signal path and when up, the send is from the Large Fader signal path.

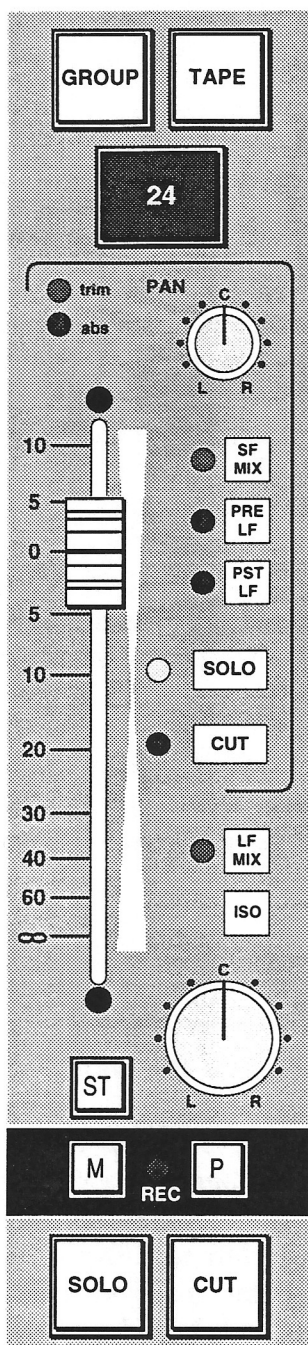
PRE – At the bottom of this section, four switches allow the aux sends to be switched in pairs to be pre-fader. When pushed down, the sends are derived pre-fader and when up, post-fader.

EFX – Each aux send control can be disconnected from its own bus and re-routed to any one of the four A, B, C, D stereo busses, the multitrack busses or the channel direct output via one of two 'EFX' busses which are internal to the module. Pressing the EFX button on even numbered aux sends (2, 4 and 6) routes that send onto the EFX EVEN bus. A green LED lights

to show that the switch is active. Pressing the EFX button on odd numbered aux sends (1, 3 and 5) routes that send onto the EFX ODD bus. A red LED lights to show that the switch is active. Pressing EFX on the stereo send routes Stereo Cue left to EFX ODD and Stereo Cue right to EFX EVEN. Only one aux send control can be assigned to an EFX bus at any one time, ie. a maximum of one odd and one even numbered aux, or the stereo aux. Lower numbered sends take priority over higher numbered ones. Cue Stereo takes priority over all mono auxes.

This feature allows a large number of independent headphone or effects send mixes to be generated, without using the Small Fader.

All the Aux send bus outputs appear on the jack field, and can be used as feeds to effects units. See Section 5 for details of the Foldback and Studio Loudspeaker systems.



Monitor Input and Small Fader Section

Monitor Input Section

The source selected by the MONITOR INPUT SECTION is governed by the state of the **GROUP** and **TAPE** buttons, and the **PRE LF** (Large Fader) and **P(O)ST** buttons.

Note that the **PRE LF** and **P(O)ST** buttons override **TAPE** and **GROUP**, but for the time being we will assume that they have not been selected.

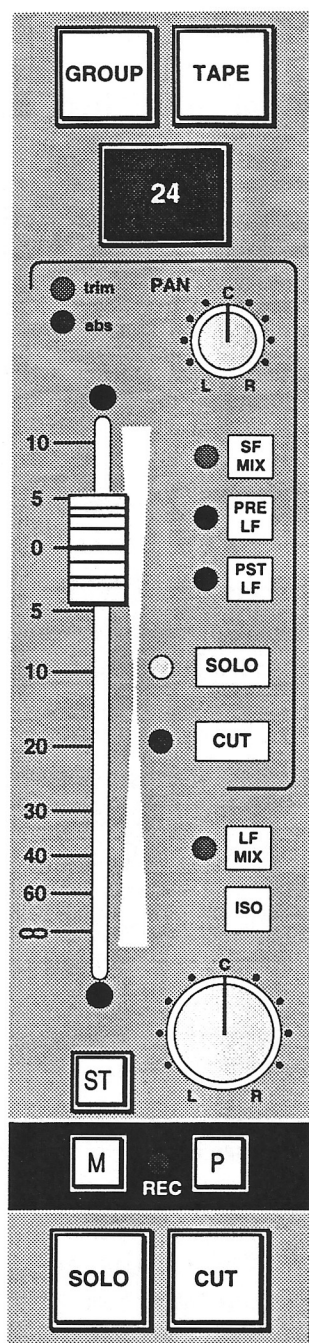
The **GROUP** and **TAPE** buttons serve two functions:

1. To select which input will be presented to the Monitor fader – the **GROUP** signal feeding the multitrack and/or the **TAPE** return from the multitrack machine.
2. To allow the large red **RECORD** button to function as a Track Ready button.

Each **RECORD** button is connected to the corresponding multitrack Track Ready remote, and is only *ready* (allowed) to prime a track for record if either **GROUP** or **TAPE** is selected. This acts as a safety feature to prevent accidental record arming.

The **RECORD** button is engraved with the module and track number to clearly indicate which tracks are being primed for record. If the module **RECORD** button is on, then that track on the multitrack will drop into record if the transport **RECORD** button, in the centre section of the console or on the machine itself, is pressed. Some machines allow the module **RECORD** button to drop the machine directly into record whilst the machine is running with its transport Record active. Other machines need a fresh transport record command before a

primed track will go into record. You should check the logic of this before dropping in for real!



Machines that accept Sony 9-pin serial track ready commands can be controlled directly from the channel RECORD buttons via the J Series Computer. The computer can also light the RECORD button lamps to provide a direct tally from the machine's serial port. See the J Series Computer Operator's Manual for details of how to map channel record buttons to the appropriate serial machine control port. Links in the module need to be set to enable this option.

The RECORD button can also be used to ready tracks for record on SSL's DiskTrack hard disk multitrack recorder (if fitted). See the J Series Computer Operator's Manual for more details.

Small Fader

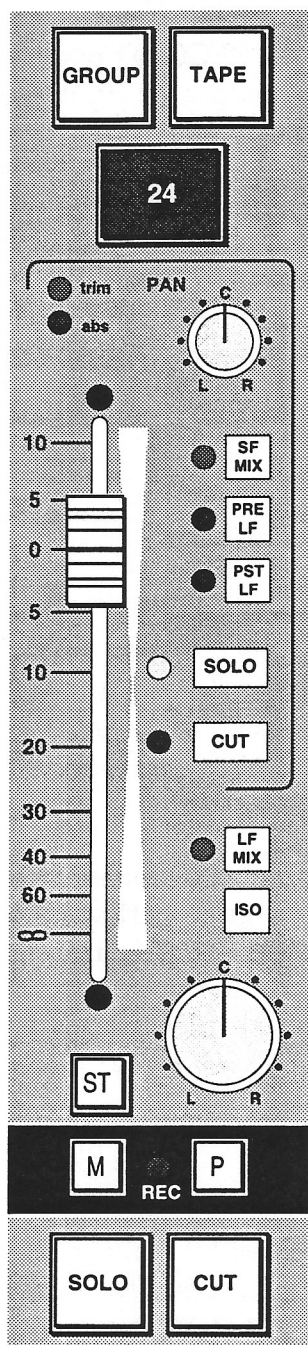
The 65mm 'Small Fader' can be in either the Channel or the Monitor path, depending on the master desk status. In either case it can be automated if required, in which case audio is switched to a VCA. It has its own automation Status (ST) switch and LEDs.

The Small Fader can also be used to provide an automated pan control between Large and Small Fader signal paths. This mode is selected from the J Series Computer by selecting '4 Channel Pan' in the Desk Setup menu. This allows any or all channels to be switched to this mode. In 4-Channel Pan mode the Large Fader controls the overall level of both signal paths while the Small Fader controls their relative levels.

4-Channel Pan mode can be used:

1. To generate mono or stereo surround mixes by routing the Small Fader to one of the Stereo Subgroup busses. The Small Fader will then provide panning from front to surround outputs while the Small Fader pan will pan across the stereo surround outputs.
2. To give automated left/right panning across the main Mix bus. If both faders are routed to the main stereo Mix bus and one is panned left and the other right, then the Small Fader will pan from left to right.

Note that, in 4-Channel Pan mode, the Small Fader cut switch is inactive and the Large Fader cut switch or a Large Fader solo will cut both faders.



Small Fader Pan Control

The Small Fader pan control is always in circuit. When the Small Fader is routed to the Multitrack or Stereo Subgroup busses it pans between odd and even (or left and right) busses. When routed to the main Mix bus it pans between left and right unless the LCR pan option is fitted, in which case it will follow the 2 CH/4 CH selection on the SL952 panel in the centre section, switching between left/right and LCR panning. In LCR mode the Small Fader will still pan between odd/left and even/right Multitrack or Stereo Subgroup busses.

Small Fader Cut and Solo

These **SOLO** and **CUT** buttons are always associated with the Small Fader, regardless of whether the Small Fader is a Channel fader or a Monitor fader (as in RECORD + SMALL FADER TO MON[ITOR] status).

Normally the **SOLO** buttons activate an 'in place' (destructive) Solo function. This is useful when using the Small Faders as Monitor faders in RECORD + SMALL FADER TO MON status. However, if the Small Faders are being used as Channel faders in RECORD status, the **SOLO** buttons can be switched to an AFL (After Fader Listen) function by selecting AFL (or **STATUS LOCK**) on the SL952 (See Section 5). The AFL signal follows left/right and LCR channel pan selection (see above), providing a true AFL-in-place function. The **SOLO** buttons can also be used to provide a PFL (Pre Fade Listen) function by selecting PFL on the SL952 panel in the centre section.

If **SOLO IN FRONT** is selected on the SL952, a mix of the AFL signal and the main Mix signal will be heard on the main monitors. A rotary control adjusts the balance between AFL and MIX.

The **CUT** button always cuts (mutes) the Small Fader. However, depending on the console Status and DIL switch and link settings in the module, it may or may not cut the Pre-Fader Cue/Aux sends. This is explained in more detail on Page 3-16.

Small Fader Source and Destination

The console STATUS buttons determine if the Small Fader is placed in the Monitor or Channel signal path. (See Section 2 for more details.)

The Small Fader can be routed direct to the main stereo Mix bus by selecting the **SF MIX** button.

For your reference, the sources and destinations of the Small Fader signal are shown below. The destinations shown are the default selections; these can be over-ridden locally at any time:

<i>Status Buttons Selected</i>	<i>Small Fader Input</i>	<i>Small Fader Output</i>
MIX	Monitor Input	Routing Matrix
RECORD	Channel Input	Routing Matrix
RECORD + SMALL FADER TO MON	Monitor Input	Stereo Mix Bus

Group/Tape Selections and the Supercue System

The GROUP and TAPE buttons are used to select monitor sources for the Monitor fader and to determine the Pre-Fader Cue feeds. As already described, these buttons also enable the module track RECORD facility. The table below lists the different combinations of buttons and the resultant signals that are fed to the Monitor fader and the Aux sends:

<i>Ready Button Selected</i>	<i>Monitor Fader Source</i>	<i>Pre-Fader Aux Feeds</i>	<i>Record Switch Enabled?</i>
None	TAPE	TAPE	NO
TAPE	TAPE	TAPE	YES
GROUP	GROUP	GROUP	YES
GROUP+TAPE	GROUP+TAPE	GROUP+TAPE	YES

As can be seen above, both Group Output and Tape Return can be monitored together, when both GROUP and TAPE buttons are selected. This is presented as a 1:1 mix. Note also that when the TAPE button is selected on its own, the Cue sends still receive a combination of Group *and* Tape, allowing the engineer to hear the drop-in while the artiste can hear both himself (or herself) as well as a feed from the Sync head of the ATR.

The table above applies while the multitrack is not running in Record. When the machine *is* in Record, the console senses the machine record line and then adjusts the monitor sources accordingly (see below). This facility of automatic source selection is called the SSL Supercue System.

Let's first look at the Monitor fader source before and during the drop-in. The following table shows the sources that will be selected:

<i>Ready Button Selected</i>	<i>Monitor Fader Source Pre-Drop-in</i>	<i>Monitor Fader Source During Drop-in</i>
TAPE	TAPE	GROUP †
GROUP	GROUP	GROUP
GROUP+TAPE	GROUP+TAPE	GROUP *

and for the Pre-Fader Cue feeds:

<i>Ready Button Selected</i>	<i>Pre-Fader Cue Source Pre-Drop-in</i>	<i>Pre-Fader Cue Source During Drop-in</i>
TAPE	GROUP+TAPE †	GROUP * †
GROUP	GROUP	GROUP
GROUP+TAPE	GROUP+TAPE	GROUP *

* The asterisk indicates that the Supercue System has switched from GROUP+TAPE to the GROUP signal only.

† Indicates that this condition will give TAPE if LK2 on the module's EQ/Dynamics card is set to ON (which forces Monitor Tape when TAPE is selected). This may have some ramifications in the following text.

In the Control Room

When laying fresh tracks it is possible to monitor either the GROUP or TAPE signal. GROUP allows you to meter signals going to the multitrack.

Remember that when TAPE only is selected, you will only hear a signal if the multitrack is playing, or if the multitrack automatically switches to Input when stopped. When the machine is in Record the monitoring automatically switches to GROUP. The metering however will continue to meter TAPE, which may in turn be effectively GROUP if the machine switches to Input when in record. TAPE will allow you to hear a "clean edit" when dropping in (i.e. the Sync output of the multitrack prior to the drop-in point and then the Group Output after the drop in point, switched when the track drops into record).

When over dubbing, selecting TAPE and GROUP together will allow you to hear the artiste playing along with the previously recorded track prior to the drop-in, and then the Group signal on its own during the drop-in.



It may seem like things are getting a little too complicated here. Don't you think it would be better if we all agreed to record direct to 2 Track?

In the Headphones

Let's assume that both TAPE and GROUP are selected. This means that the mic is always present in the headphones and allows the artiste to play or sing along with the previous take, and in many cases pick up any complex nuances that were in the original performance. The artiste will hear himself (or herself) as well as the machine Sync output up to the drop-in point.

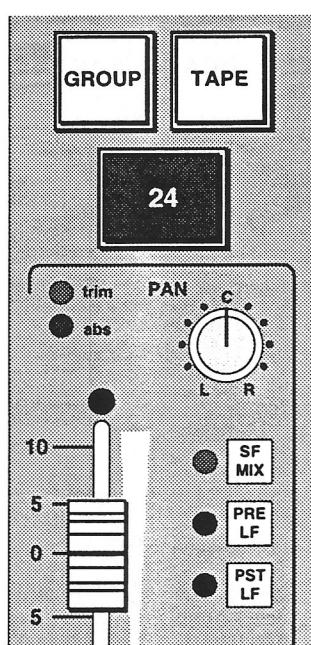
After the drop-in point, the TAPE signal is switched off.

Monitor Cut and Solo

When laying tracks it is often preferable to be able to CUT and SOLO the Monitor feeds without cutting the Pre-Fader Cue sends to the studio headphones. There is a link option (LK3) on the upper module card which determines if the Monitor Pre-Fader Cue sends are cut by the Monitor Cut or not.

In RECORD or REPLAY status, Large fader Cuts do not cut the Pre-Fader Aux sends if this option has been selected.

In any other status, Pre-Small Fader Aux sends will not be cut by the Small Fader Cut button if this option has been selected.



Small Faders as Extra Auxiliary Sends

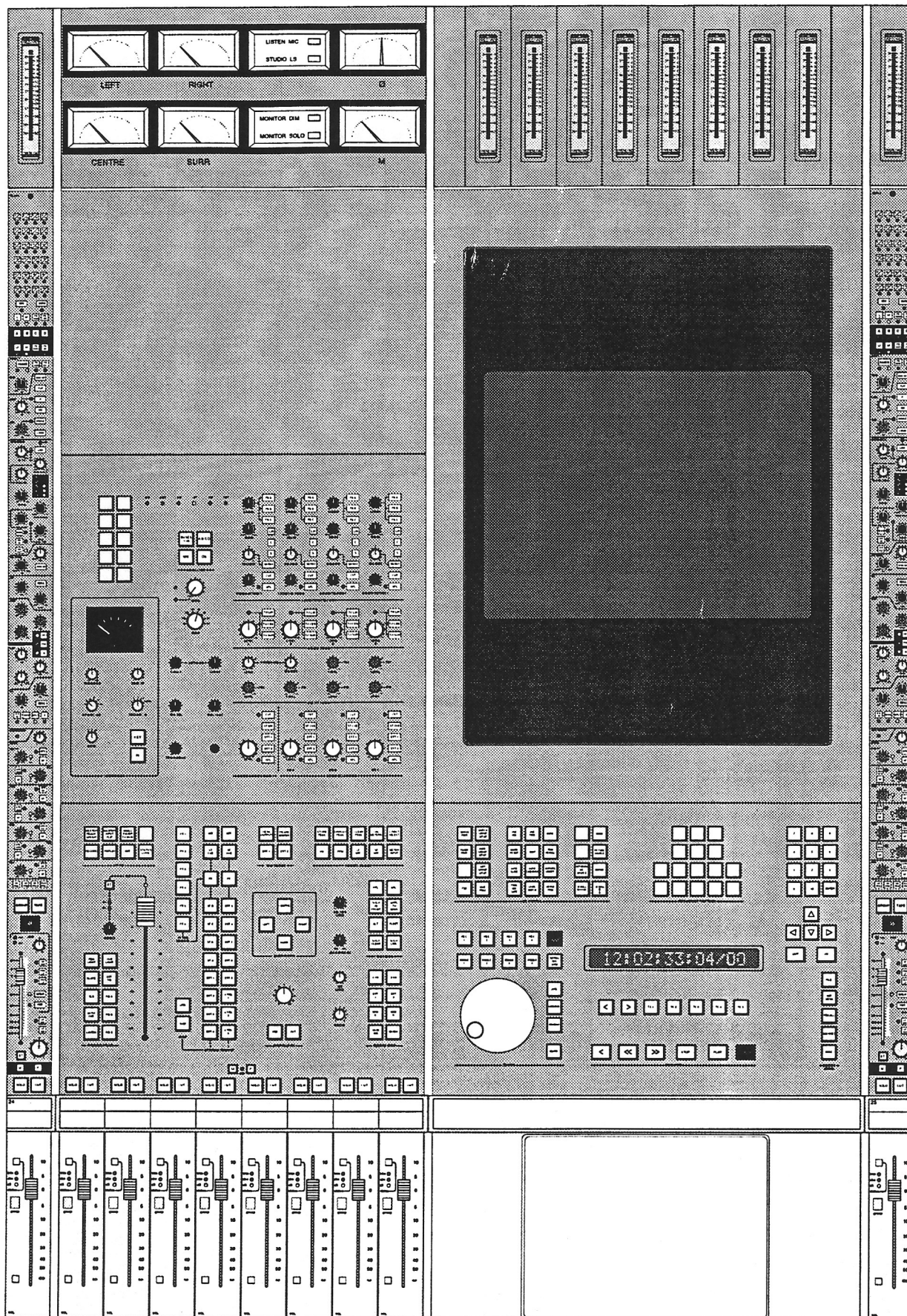
The PRE LF and P(O)ST LF buttons, next to the SMALL FADER, provide a means of feeding the Channel signal into the Monitor path in place of the GROUP and TAPE selections.

Note that these two buttons *override* any GROUP or TAPE selection.

This is very useful in MIX status for deriving automated auxiliary sends or clean feeds (see Section 2). These can then be fed to the Routing Matrix and out to effects devices or cue lines e.g. Groups 25-48 can be used as clean feeds of a live mix, the Small Faders being used to send the Channel signal to as many of these clean feeds as required.

<i>Buttons Selected</i>	<i>Source of Small Fader Input</i>
PRE LF	Pre-Large Fader
POST LF	Post-Large Fader

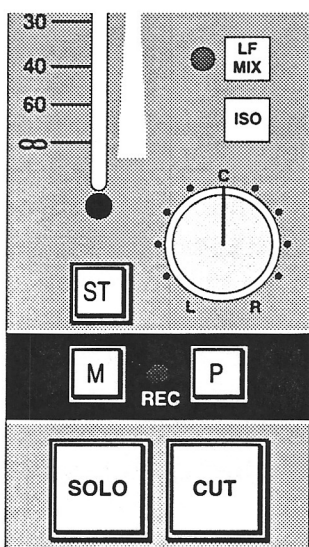
Note that when 4-Channel Pan mode is selected from the computer screen, POST LF is selected automatically, although the LED does not light.



Large Fader

The LARGE FADER will usually be fed from the CHANNEL INPUT SECTION. However there are exceptions as this table shows:

<i>Status Buttons Selected</i>	<i>Large Fader Input</i>	<i>Large Fader Output</i>
MIX	Channel Input	Stereo Mix
RECORD	Monitor Input	Stereo Mix
RECORD + SMALL FADER TO MON	Channel Input	Routing Matrix



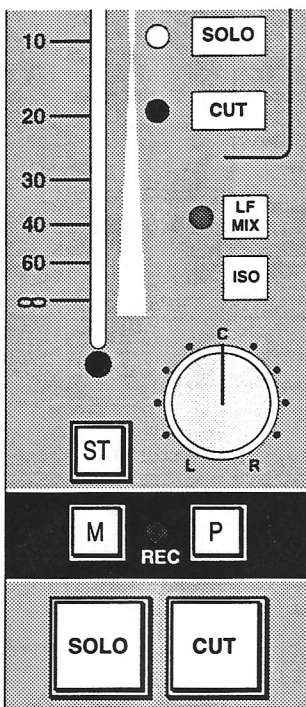
Large Fader Pan Control

The Large Fader pan control is always in circuit. When the Large Fader is routed to the Multitrack or Stereo Subgroup busses it pans between odd and even (or left and right) busses. When routed to the main Mix bus it pans between left and right unless the LCR pan option is fitted, in which case it will follow the 2 CH/4 CH selection on the SL952, switching between left/right and LCR panning. In LCR mode the Large Fader will still pan between odd/left and even/right Multitrack or Stereo Subgroup busses.

For information on the **ST**(atus), **M**(atch) and **P**(lay) buttons, please see the J Series Computer Operator's Manual.

The large illuminated **SOLO** and **CUT** buttons are always associated with the Large Fader.

SOLO – Normally the **SOLO** buttons activate an 'in place' (destructive) Solo function. This is useful when using the Large Faders as Monitor faders in RECORD status. However, if the Large Faders are being used as Channel faders in RECORD + SMALL FADER TO MON status, the **SOLO** buttons can be switched to an AFL (After Fader Listen) function by selecting AFL (or **STATUS LOCK**) on the SL952 (See Section 5). The AFL signal follows left/right and LCR channel pan position (see above), providing a true AFL-in-place function. The **SOLO** buttons can also be used to provide a PFL (Pre Fade Listen) function by selecting PFL on the SL952 panel in the centre section.



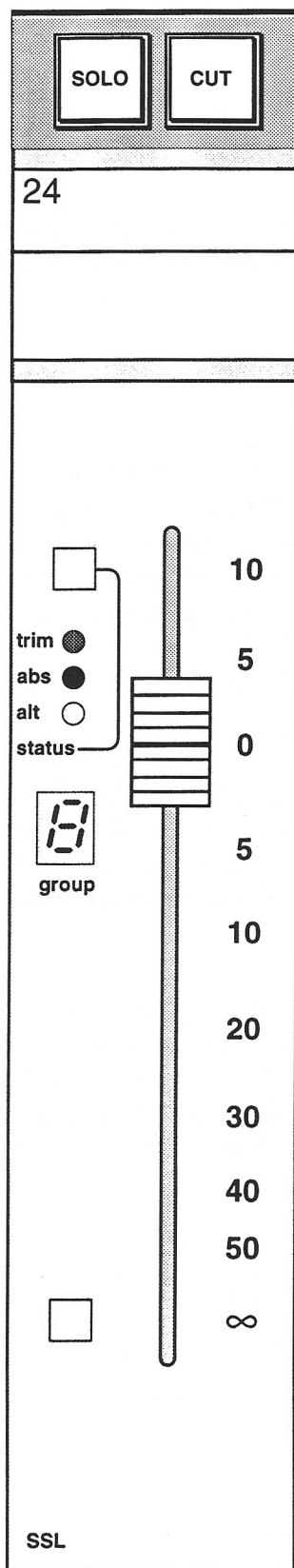
If **SOLO IN FRONT** is selected on the SL952, the **SOLO** buttons provide a mix of the AFL signal and the main Mix signal on the main monitors. A rotary control adjusts the balance between AFL and MIX.

Solo Isolate

If the module's **ISO** switch is selected, then the Large fader signal path will not be cut by another channel being Soloed. The **ISO** switch can also solo isolate the Small Fader. To do this hold down the Small Fader **SOLO** switch while selecting **ISO**. The solo isolate function will now always apply to the Small Fader. This link can be cleared by holding down the Large Fader **SOLO** switch and selecting **ISO** (or by turning the console off and on again).

CUT – When the Large Fader is used in the Channel signal path the **CUT** button normally cuts the channel in two places – at the input and immediately post the fader. This means that Pre-fade aux sends will be muted by the Cut switch or by a Destructive Solo

STATUS – This switch beside the Large Fader (see opposite) is related to the automation system, as are the **trim**, **abs** and **alt** LEDs. See the J Series Computer Operator's Manual for more details.



Large Fader Subgrouping

The Large Fader can be assigned to one of the eight GROUP FADERS located in the console centre section. The number of the Group fader to which a channel is assigned is displayed in a 7-segment LED display next to the fader (see opposite).

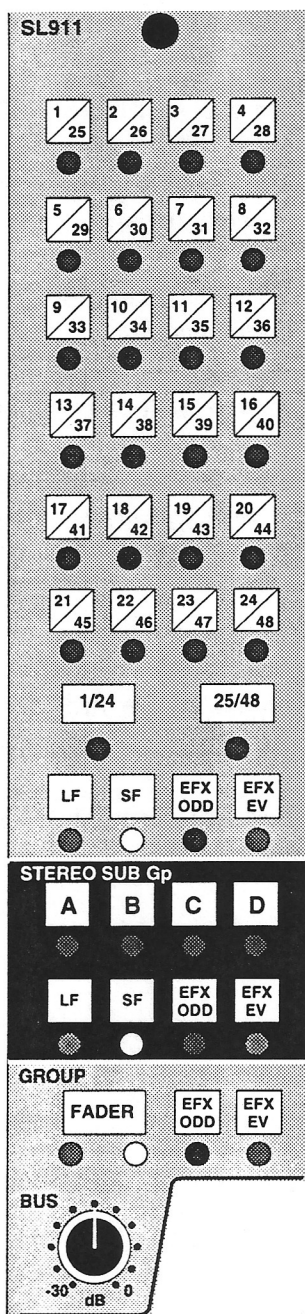
Group Faders can also be assigned to other Group Faders, so many combinations of subgrouping can be achieved.

To assign a Large Fader to a hardware group, select **HARD GROUP SETUP** on the SL955 Motion Control panel in the centre section. Now by quickly pressing the switch at the bottom of the fader, the 7-segment display will increment by one. If the switch is held down for a short period it will decrement the display by one.

If 0 is selected on the display, then the fader will be cut by Group Fader solos. If the display is blank then the fader is unaffected by group solos.

Both the Large Faders and the Group Faders are connected to the J Series Computer for automated mixing.

Channel Outputs



Routing Matrix

The console has as many Group Outputs as there are I/O modules. The Routing Matrix allows any module to route to any or all of the first 48 of these Group Outputs.

The matrix may be fed from either fader path depending on the console's master STATUS selection and the module's Routing Matrix source select switches.

There are four main uses for this matrix:

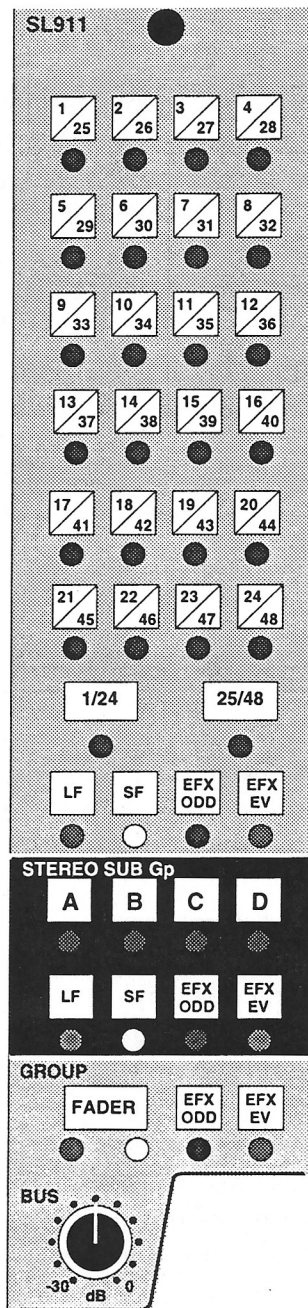
1. In RECORD or REPLAY status, the Channel signal can be fed to any multitrack group for track laying, usually from the SMALL FADER *or*, if **SMALL FADER TO MON(ITOR)** is selected, from the LARGE FADER. The PAN control of the source fader will pan between Odd and Even groups (the odd Group is the left of the pair and the even Group is the right).

2. In MIX status either the SMALL FADER signals (or the LARGE FADER if the default source selection is overridden locally) can be fed to the Routing Matrix for audio subgrouping on any of the first 48 channels. Having been routed to the selected bus(es), these signals can be picked up on the corresponding LARGE FADER by pressing the **SUB GP** button, or on the SMALL FADER via the Group Monitor input by selecting the **GROUP** button.

3. In MIX mode the SMALL FADER can be used as an additional, automated, send via a Multitrack bus. Using the **PRE LF** and **P(O)ST LF** buttons next to the SMALL FADER, the Channel signal, pre- or post-Large Fader, can be routed to a Multitrack bus and then patched, from Row G, to an effects unit input.

<i>Buttons Selected</i>	<i>Source of Small Fader Input</i>
PRE LF	Pre-Large Fader
POST LF	Post-Large Fader

Note that these buttons are also active in RECORD and REPLAY status.



4. Any of the auxiliary send controls can be used as an additional send, via the 'EFX' system. See **Auxiliary Sends** on Page 3-9 for further details.

Routing Bank Select Switches

These two switches determine whether the 24 routing switches feed to busses 1-24 or 25-48, or both. If neither is pressed the Routing Matrix switches above are inactive.

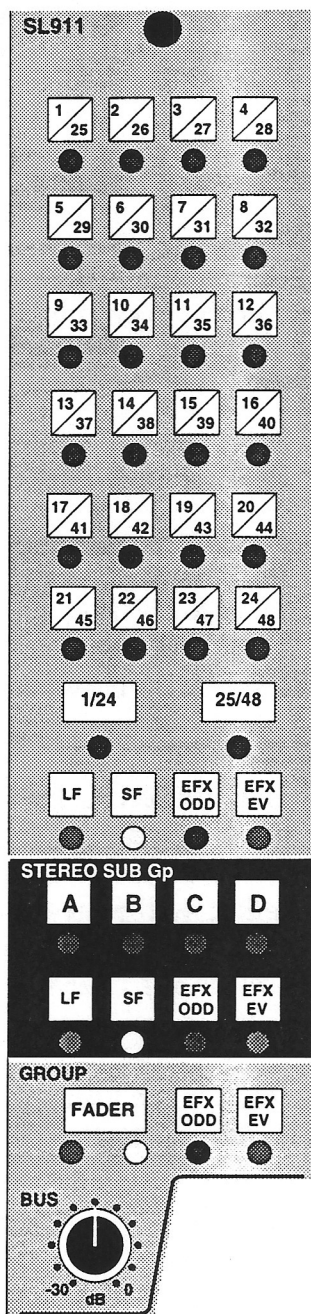
The Routing Source Select Switches

The source for the multitrack Routing Matrix is determined by the four Source Select switches below the 48 bus routing switches. These are **LF**, **SF**, **EFX ODD** and **EFX EV(EN)**. **LF** and **SF** are inter-cancelling, electronically latched, switches. Pressing either one will toggle the source selection between Small and Large Fader.

Selecting **EFX ODD** will feed any aux signal routed to EFX ODD to both odd and even numbered busses. Selecting **EFX EV** will feed any aux signal routed to EFX EV to both odd and even numbered busses. Selecting both together will feed the EFX ODD signal to odd numbered busses and the EFX EV signal to even numbered busses. The EFX selections override the **LF** and **SF** switches.

The table below shows default source selection for the Routing Matrix according to console status. These selections can be overridden locally at any time.

Status	Routing Matrix fed from
RECORD/REPLAY	Channel Input via SMALL FADER
RECORD/REPLAY + SMALL FADER TO MON	Channel Input via LARGE FADER
MIX	Monitor Input via SMALL FADER



Stereo Subgroup Bus Routing

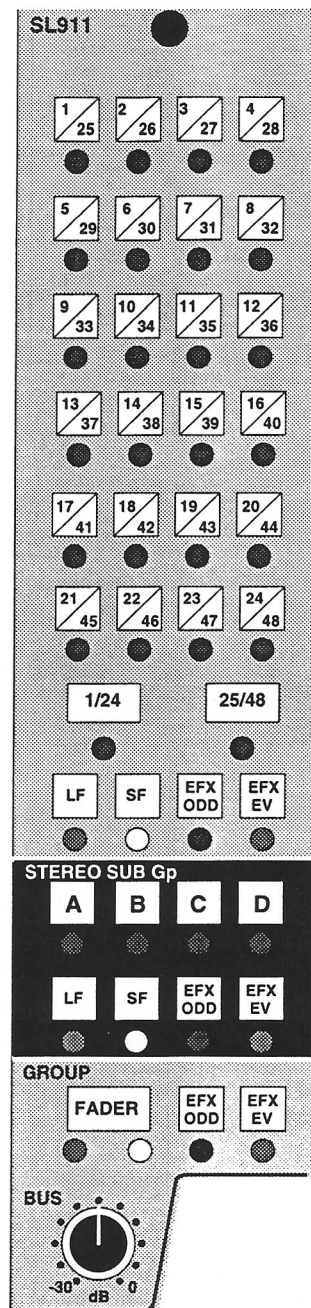
Four switches, **A**, **B**, **C** and **D**, route the module to any one or all of the four Stereo Subgroup busses. Sources for these Stereo Subgroup busses are determined by the four Source Select switches below the bus routing switches. These are **LF**, **SF**, **EFX ODD** and **EFX EV(EN)**. Selecting **LF** or **SF** will feed the post-pan control signal from the Large or Small Fader to the Stereo Subgroup bus routing. Selecting **EFX ODD** will feed any aux signal routed to EFX ODD to both left and right busses. Selecting **EFX EV** will feed any aux signal routed to EFX EV to both left and right busses. Selecting both together will feed the EFX ODD signal to left busses and the EFX EV signal to right busses. The **EFX** selections over ride the **LF** and **SF** switches.

Group Output Section

This section of the module, below the Routing Matrix, comprises a bus mixing amplifier with gain control and the source select buttons for the Group Output.

The Group Output can be sourced from four sources:

1. The corresponding Multitrack bus (all switches up).
2. **FADER** – This button provides a means of routing the post-channel fader signal on that module *directly* to the corresponding Multitrack Group Output. This bypasses the Routing Matrix, the track mix bus, the bus mix amp and the Bus Trim control. This routing selection improves noise figures but disables all other channels routed to that Group Output, as the Group mix amp is disconnected from the Group Output (see Section 2). The bus mix amp will, however, still feed the **SUB GP** button on the Channel Input Section. Either the green or yellow LED below the **FADER** switch will light to indicate which fader is the source; yellow indicates Small Fader, green indicates Large Fader.



3 & 4. EFX ODD and EFX EV(EN) feed the corresponding EFX bus to the Group Output, allowing this output to be fed via an aux send control.

Bus Mix Amp and Trim Control

The mix amp takes its input from the associated Multitrack mix bus (e.g. all signals routed to Multitrack Bus 7 will be controlled by the bus mix amp on Module 7). The channel Group Output appears on patch row G where the signal is normalised down to the Multitrack Send (i.e. to the record inputs of the multitrack) and to the Group Monitor Input via the **GROUP** button, located at the top of the Small Fader section.

The **BUS** trim control attenuates the combined level of signals routed to that bus, and normally these controls are left fully up (clockwise). Their main use is for attenuating a Group Output when, for example, several channels have been assigned to a bus and a relative balance has been set on the faders. If the overall signal level is too high, then the **BUS** trim control can be adjusted to send an optimum level to the output and therefore to the multitrack.

When a track bus is not being used as a multitrack send, it may be routed to the corresponding **CHANNEL INPUT SECTION**, by pressing **SUB GP** on that module (see also Page 3-2). The channel will now act as an audio subgroup, and the **BUS** trim as the channel input gain control.

Solid State Logic
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SECTION 4

Signal Processor Routing

Console Overview

The SL 9000 J is the latest analogue mixing console from Solid State Logic. It draws on and develops many of the features of SSL's other music consoles, while retaining a control surface that will be familiar to any recording engineer familiar with SL4000, 6000 or 8000 Series systems.

The desk has an in-line signal path, with master status switching to quickly re-configure the console for particular tasks, but the signal routing can be overridden locally, providing even more flexibility than other SSL consoles.

The desk has 48 Multitrack busses, 4 Stereo busses, a Main Stereo (optionally LCR) bus and 8 Auxiliary busses, which are divided into 6 Mono FX sends and a Stereo Cue bus. The four Stereo busses can be used as subgroups, additional record feeds, to generate Surround or Centre signals, or as additional FX sends.

An ingenious reassign system allows Auxiliary send controls on individual channels to be disconnected from their own bus and routed to any of the Stereo or Multitrack busses, allowing up to 64 discrete FX send mixes to be generated.

As well as the Large Fader level and Cut, the following console channel functions are automated:

- Small Fader level
- Small Fader Cut
- EQ In/Out
- Insert In/Out
- Individual Aux On/Off switches

These functions are controlled from an entirely new automation computer, providing additional processing power, colour graphics, pop up menus etc. The J Series Computer also provides complete integration with SSL's digital product range, allowing random access multitrack recorders, digital work stations, random access video recorders and routing switchers to be controlled from the console. Further information on the automation system is contained in the J Series Computer Operator's Manual.

The following descriptions are intended for those engineers who are already familiar with SSL's SL4000/6000/8000 range of consoles. Those requiring a more detailed description of the console's features and functions should refer to the relevant sections of this manual.

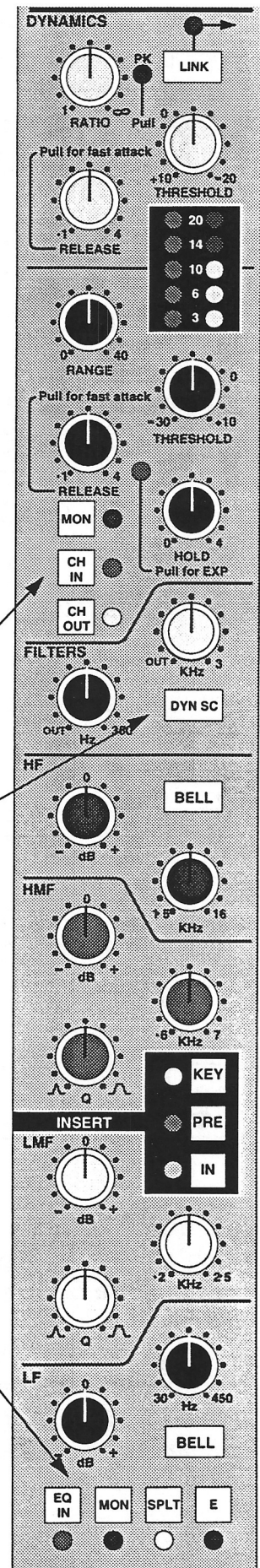
Signal Processor Routing

Each SL911J Input/Output module contains three separate signal processing devices:

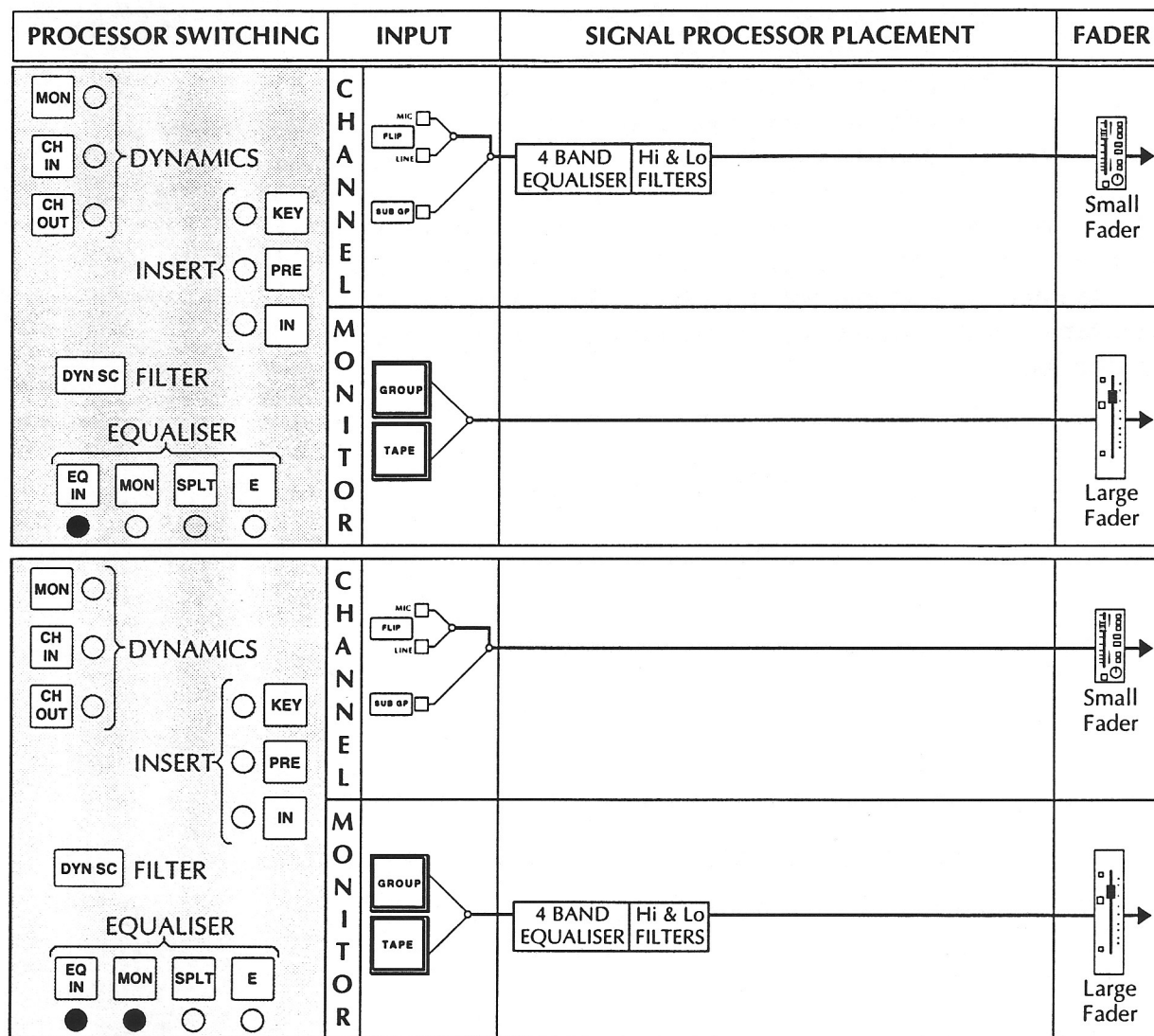
- The 4-band Parametric Equaliser
- The High and Low Pass Filters
- The Dynamics Section comprising a compressor/limiter and expander/gate.

These processors can be used in either the Channel or the Monitor signal paths. Seven buttons are used to determine where each processor will be placed in the signal chain. Diagrams on the following pages show the various possible combinations.

Processor Routing Buttons



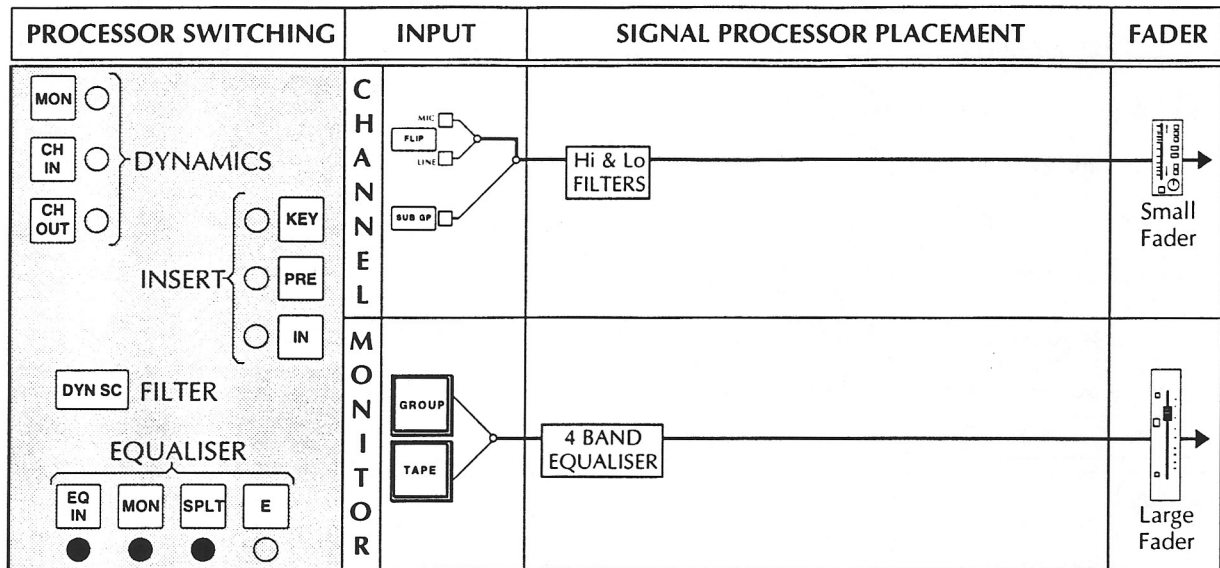
The first two examples show that the Equaliser and Filters are normally treated as a single unit, which may be switched into either the Channel or Monitor path. All these diagrams show input and fader selections for the RECORD status. Note that the Channel Input Section always feeds the Channel signal path and the Monitor Input Section always feeds the Monitor signal path.



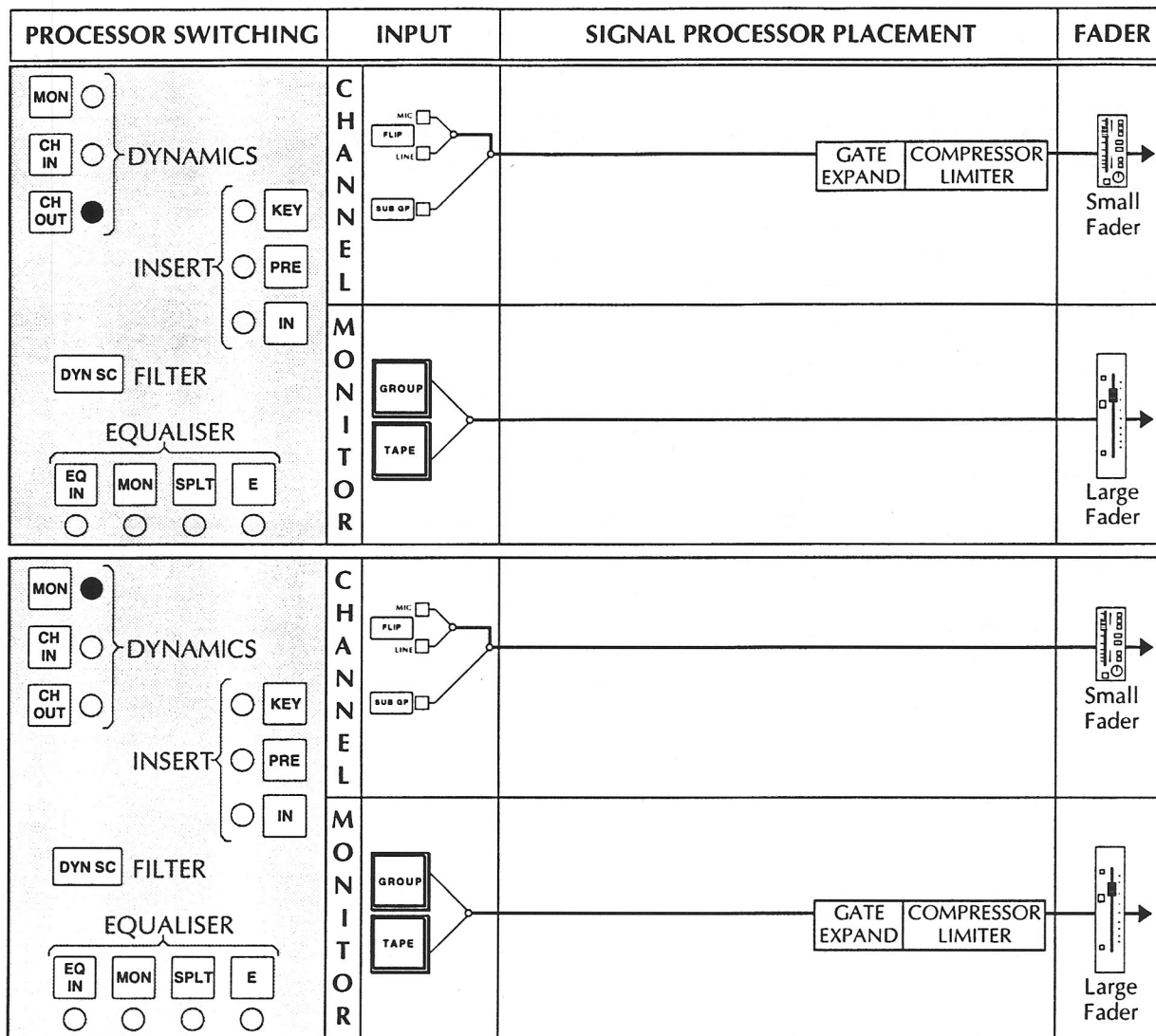
Note that the Filters normally follow the Equaliser, but see opposite page. The E button is used to select alternative parameters for the EQ, and has no effect on the position of the EQ in either signal path.

As well as the MON button, the EQ IN button must also be pressed to switch the EQ into circuit in the Monitor path. This represents a change from the SL4000, caused by the fact that the EQ IN button is automated and the EQ may be switched in or out of both the Channel and Monitor paths under computer control.

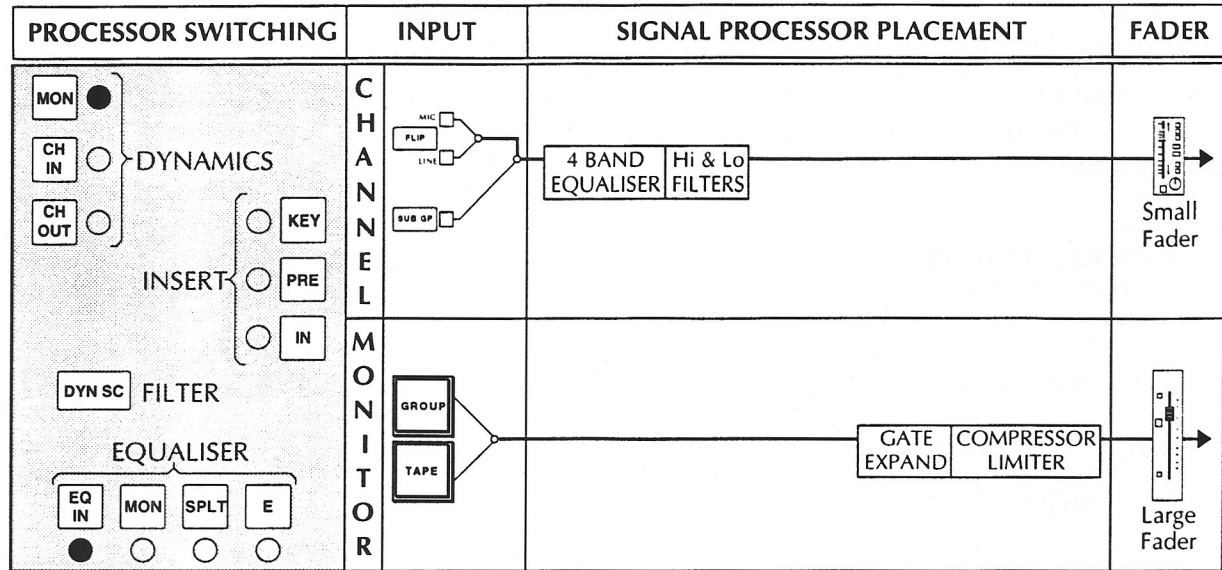
The **SPLT** Button always splits the Filters away from the Equaliser and places them directly after the input section. This allows the Equaliser to be placed in the Monitor path and the Filters in the Channel path:



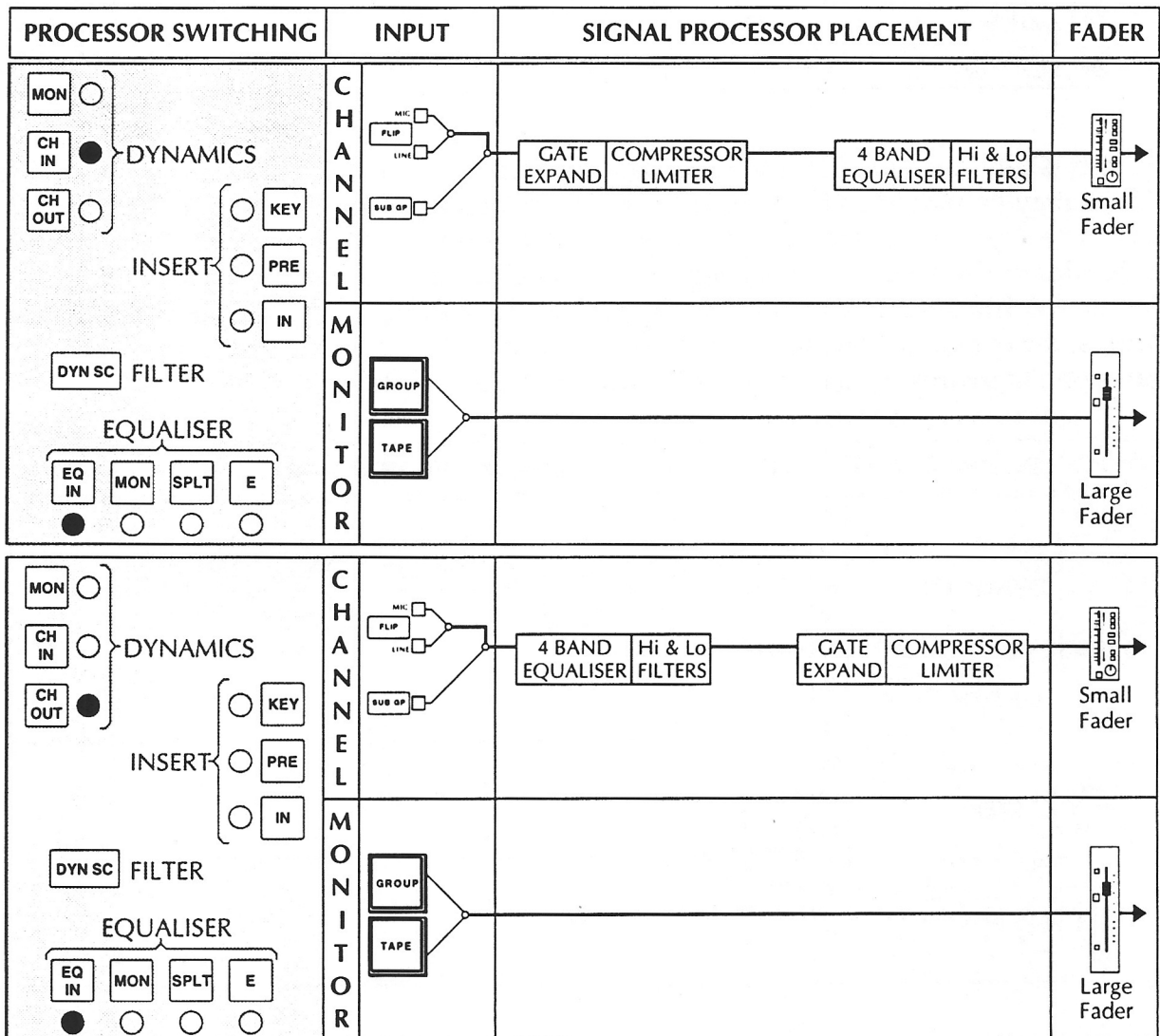
The Dynamics section can also be switched to either the Channel or Monitor path:



The Equaliser may be placed in the Channel path and the Dynamics in the Monitor path:

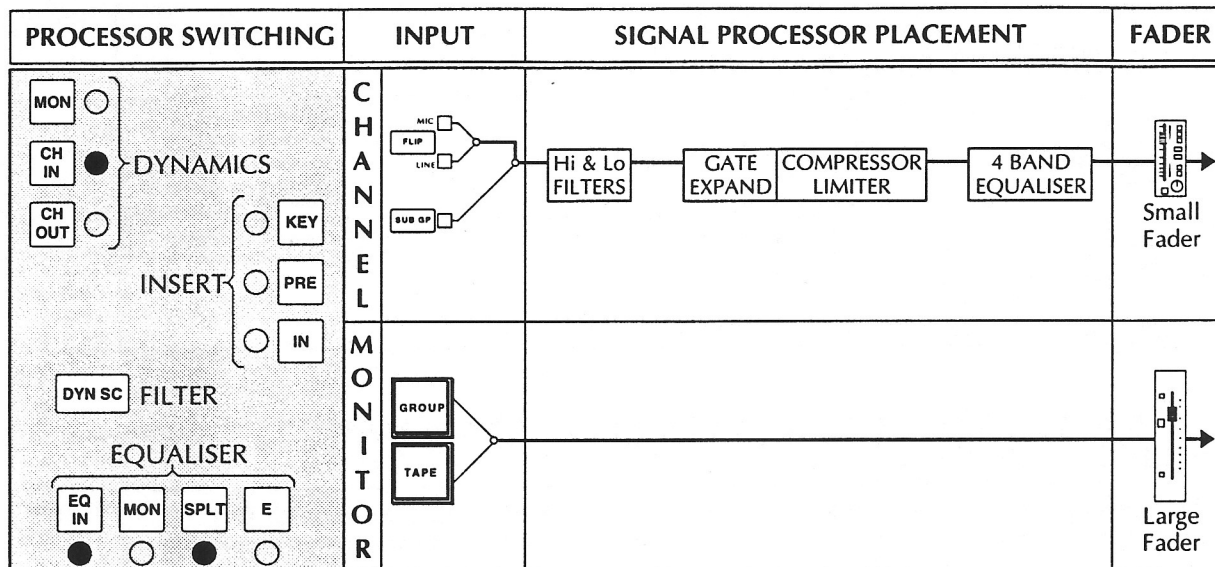


The Dynamics section may be placed pre or post the Equaliser in the Channel using the CH IN or CH OUT buttons:

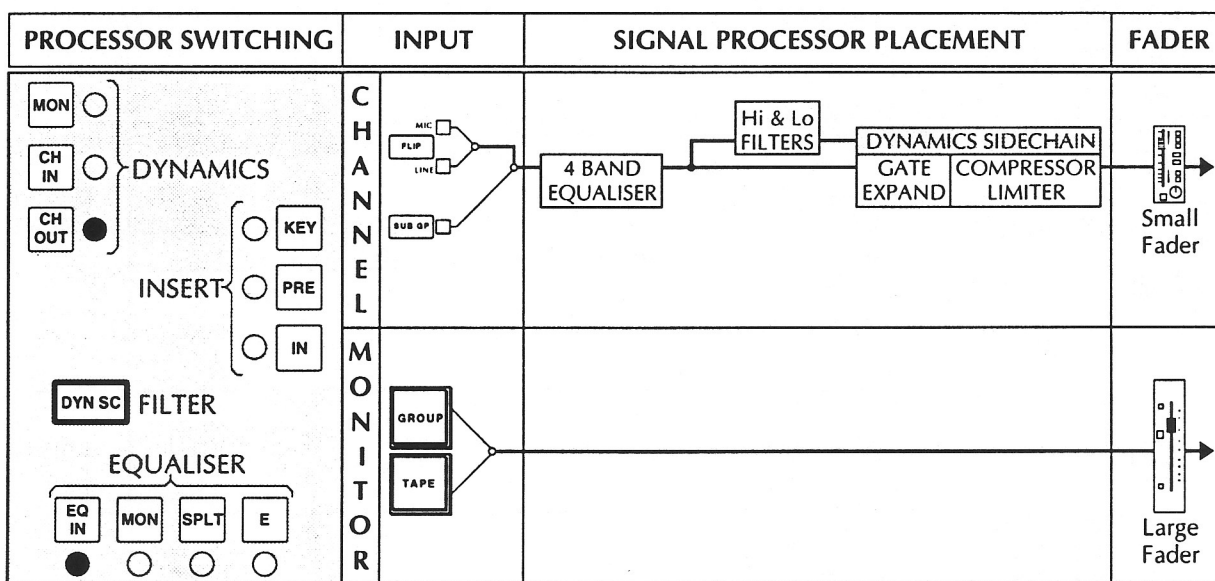


Using the **SPLT** button, the Filters may be placed pre-Dynamics and the Equaliser positioned post-Dynamics in the Channel.

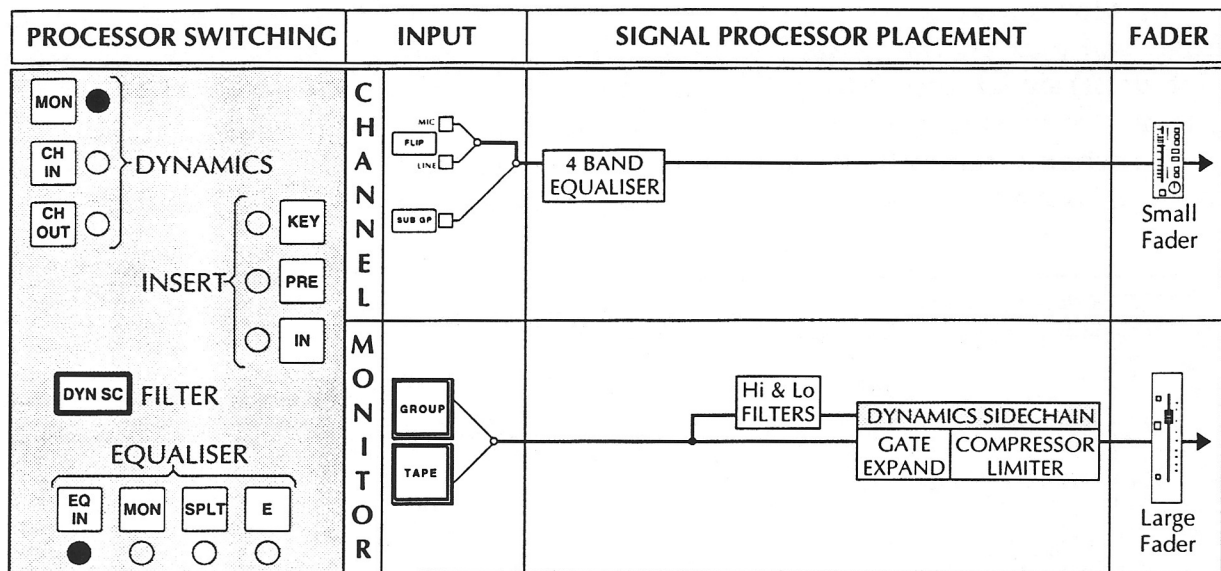
It is also possible, using the **SPLT** button, to place the Filters in the Channel path while the Equaliser and Dynamics sections are in the Monitor path, although this is not shown. Note that the Dynamics section always follows the Equaliser when they are both placed in the Monitor path.



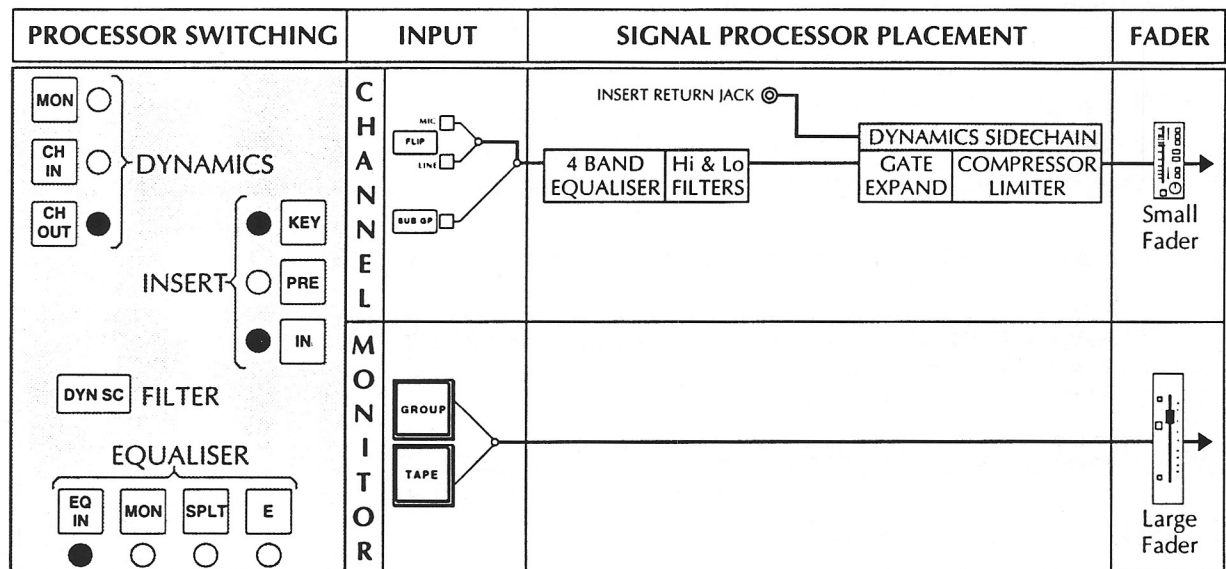
Access is also provided to the level sensing sidechain of the Dynamics section. The Filters may be placed in the sidechain, by the selection of the Filters' **DYN SC** button, with the Dynamics section in either the Channel or Monitor path. Frequency dependent effects such as stressing or de-essing are thus easily achieved. This is also useful for filtering out unwanted signals when gating. For example, when gating drums, the cymbal frequencies can be filtered out of the sidechain signal to prevent the gates on the drums from opening when the cymbals are played.



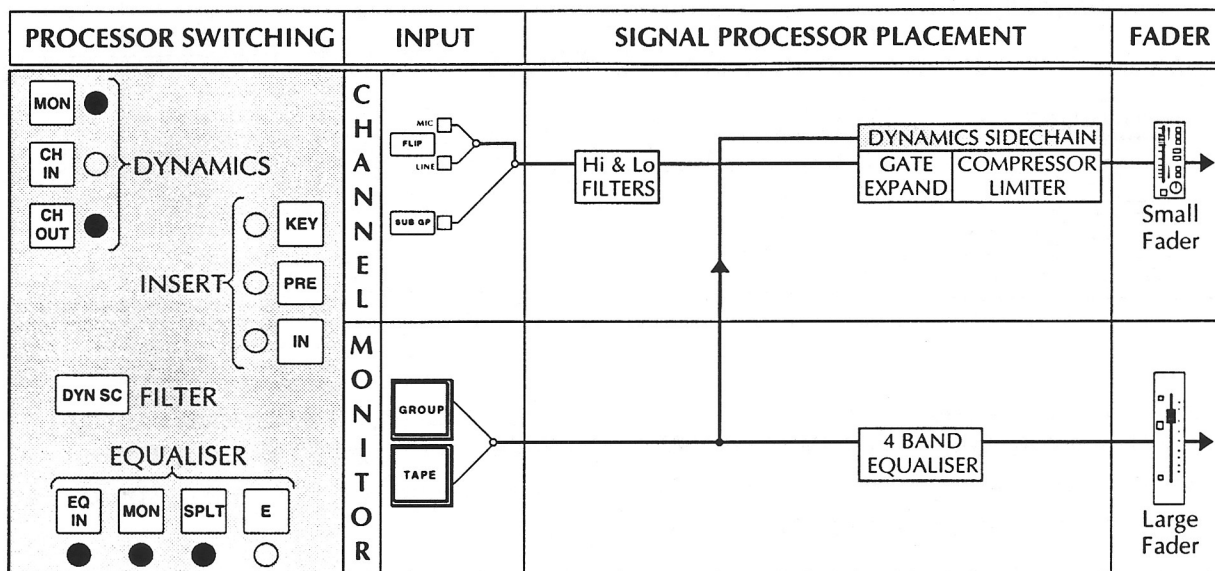
The Equaliser may be placed in the Channel, the Dynamics in the Monitor and the Filters switched to the sidechain input:



The Dynamics section can be 'keyed' from an external signal connected to the I/O module's Insert Return jack (Row F). Selecting the Insert Point's IN and KEY buttons re-routes the insert return to feed the Dynamics' sidechain input. This provides an easy method of setting up gated reverbs etc.

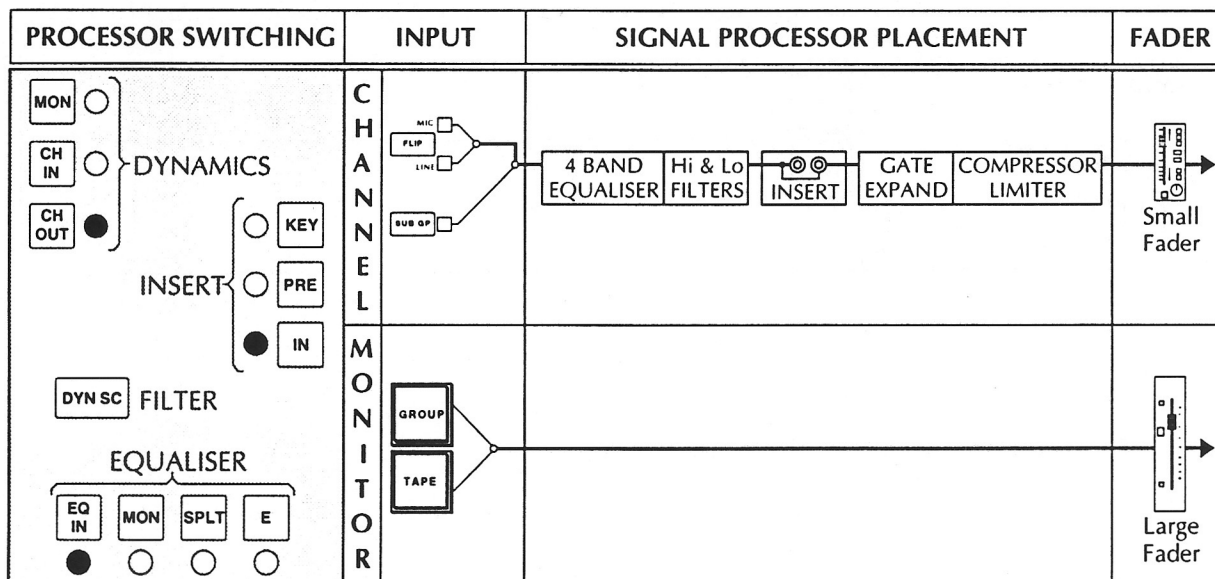


In addition to the 'keying' facility described above, the Dynamics section may also be keyed from an external signal by selecting either **CH IN** and **MON** or **CH OUT** and **MON**. The key signal is taken from the Monitor Input pre-fader, so patching into the Group Monitor Input or Tape Monitor Input will access the sidechain. As the Monitor Input can pick up the module's Group Output (ie. Module 21 can monitor Group Output 21) signals can be routed to the module's Group via the Routing Matrix and be selected to the sidechain input with the **GROUP** button. This application, especially useful when mixing, where a module's Dynamics section is keyed from another module, is covered in more detail in the applications guide.

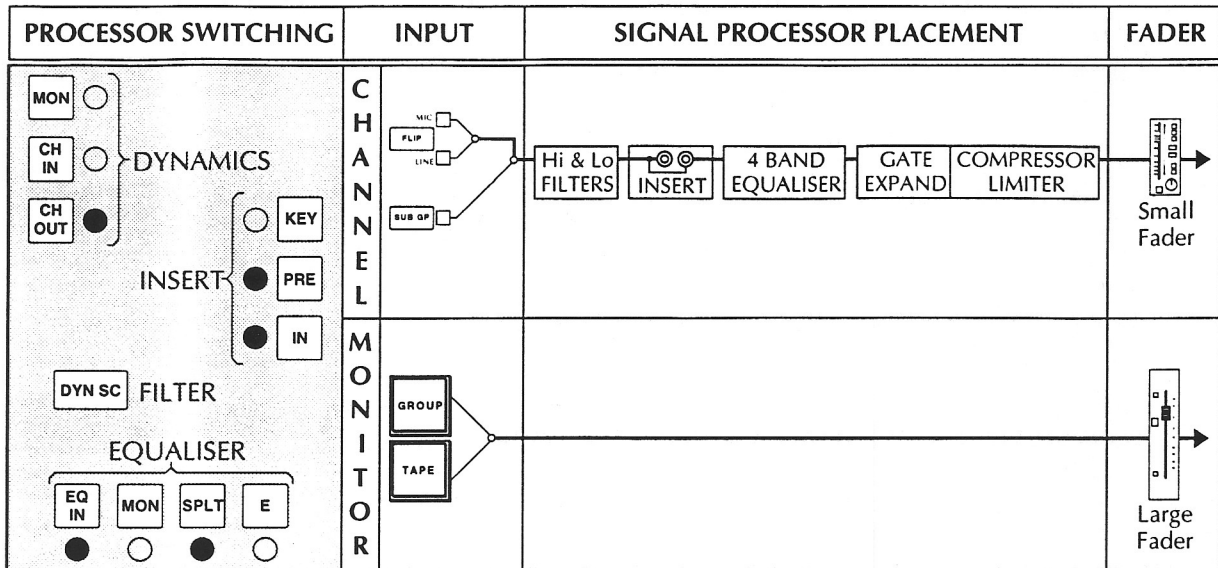


In addition to each module's internal signal processing, external processing devices may be connected into the Channel signal path via the Insert Send and Return points on the patchbay (Rows E and F). Note that the Insert IN switch is automated.

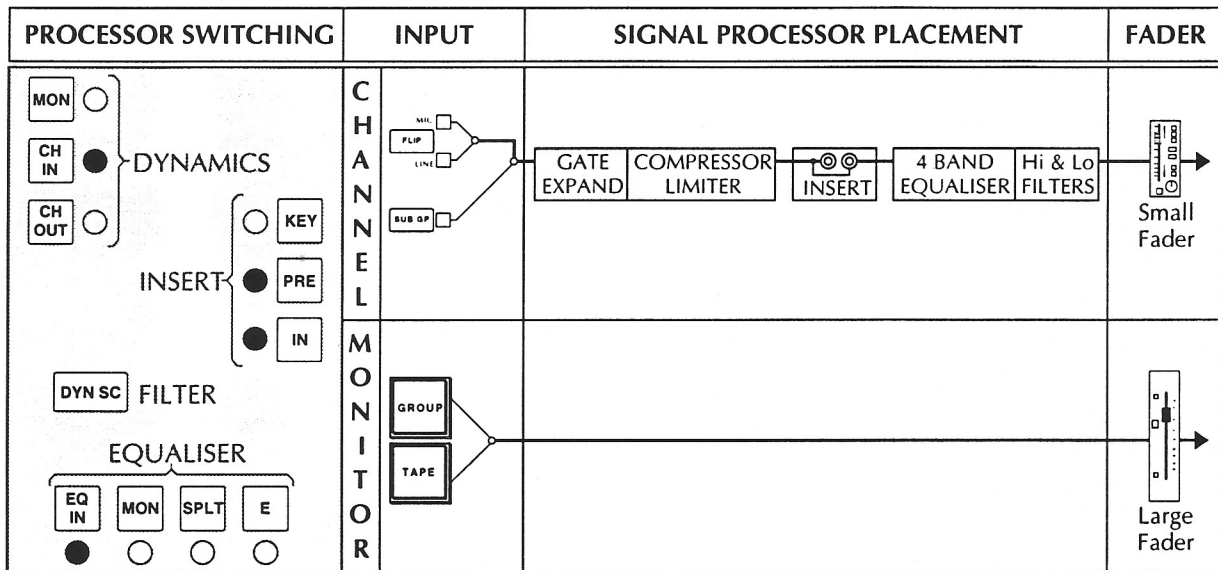
The Insert normally follows the Equaliser (and Filters if not split):



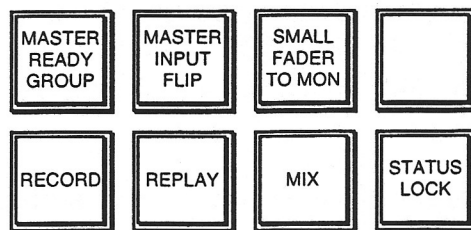
By selecting **PRE** and **IN**, the Insert may be placed before the Equaliser. Note that, in the following example **SPLT** has placed the Filters directly after the Channel Input:



And finally, how about this:



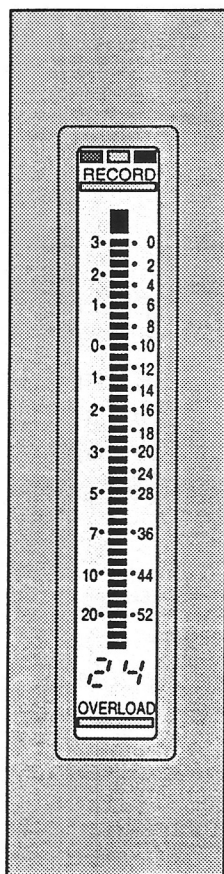
Master Status Switching



The console retains the familiar RECORD, REPLAY and MIX statuses. Note, however, that in RECORD or REPLAY Status, the Large Fader is in the Monitor path and the Small Fader is in the Channel path. This represents a logical change from SL4000/6000/8000 Series consoles where the additional selection of VCA TO MONITORS or FADER REVERSE is required to achieve the same signal flow.

To reverse faders in RECORD or REPLAY status, select SMALL FADER TO MON. Note that there is a great deal of flexibility in sourcing signals to feed to the various busses – either fader can be switched locally to feed any of the busses in any status.

Metering



Depending on the specification of the console you are working on, it may be fitted with standard VU metering or SSL's back lit LCD bargraphs. These can be switched between VU and digital Peak scales from the console's centre section. The 0dB points of the VU scale can be adjusted to read between 0 and +6dBu. Factory default is +4dBu. The 0dB point of the Peak scale can be adjusted from a terminal to read between +16dBu and +24dBu. Factory default is +18dBu (-6dBFS on a Sony multitrack).

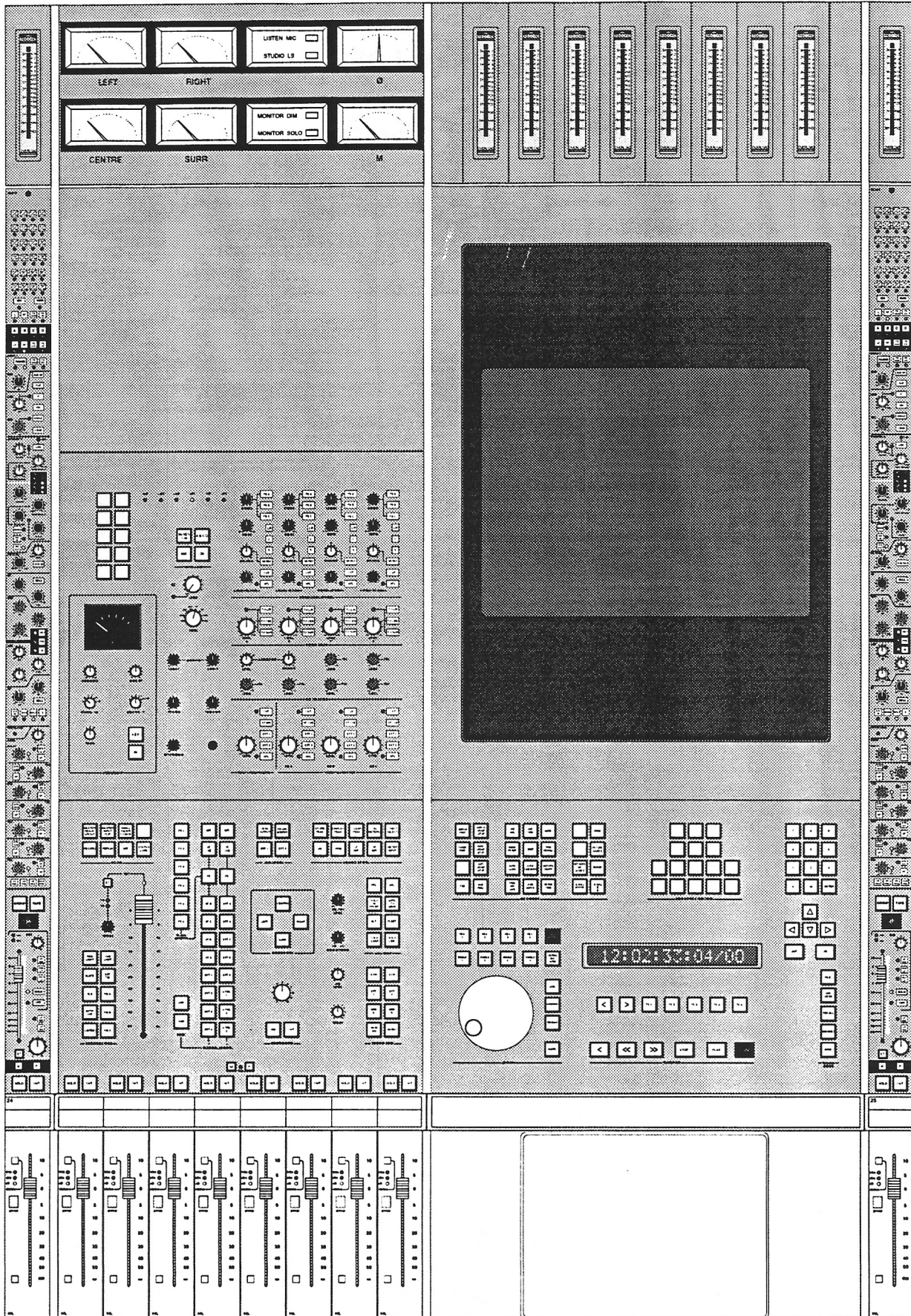
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SECTION 5

The Console Centre Section





The Console Centre Section

The centre section of a J Series console is fitted, as standard, with two centre bays, one eight modules wide and one ten modules wide (see opposite).

Located to the left of the centre section, the SL 952/953J Master Facilities Module houses the master logic controls, monitoring and metering controls, auxiliary send and echo return masters, communications facilities, power supply rail indicators and a test oscillator.

Eight master control group faders are located below the SL952J.

The control panel and colour monitor for the J Series Studio Computer are mounted to the right of the centre section. A tablet and pen, for access to the computer's on-screen menus and functions, are fitted in the fader tray below the control panel. A QWERTY keyboard is provided in a pull-out drawer below the tablet. For more details please read the J Series Computer Operator's Manual.

The SL 952/953J Master Facilities Module

While reading this section you may like to refer to the fold-out drawing of the console layout, located at the front of this manual.

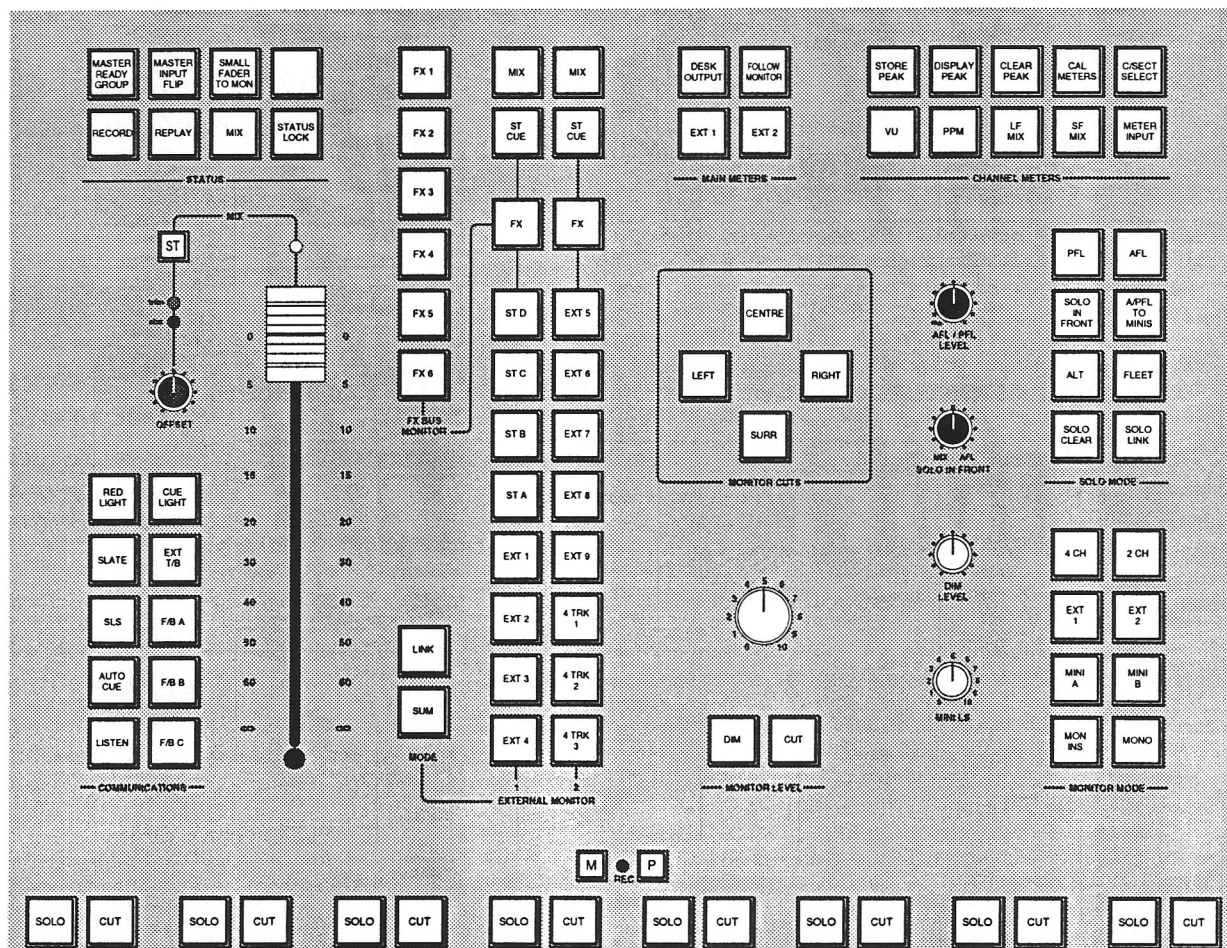
Power Supply Indicators

Working down from the top of the panels, one of the first sections you will meet has six LEDs which display the current state of power rails within the console.

The 48 volt supply provides phantom power to the mic lines; the bipolar 18 and 22 volt, and the 5 volt supplies are for audio and logic circuitry respectively.

± 14 volt supplies provide power for the fader motors and the meter back lights. There are no LEDs to indicate the state of these rails, but the absence of meter illumination will provide a clue if they are missing!

All LEDs should normally be illuminated, if not – PANIC!



Status Buttons

This group of buttons, located in the upper left of the SL952 panel (see opposite), is extremely important as they control signal routing paths within the I/O modules. Four different status configurations are available. These are described in detail in Section 2 but briefly function as follows:

RECORD – This status is designed for recording sources to a multitrack machine. It switches all channel inputs to Mic and the multitrack machine (optionally) to Sync Replay. The channel inputs are fed via the Small faders to the multitrack Routing Matrix, and thus to the multitrack. The Large Faders take the multitrack returns and/or the group sends (depending on the selection of GROUP and TAPE buttons) and feed these to the main output busses for control room and studio monitoring.

REPLAY – The same routing configuration as **RECORD** status but (optionally) switches the multitrack to normal Replay. All Large Fader inputs switch to TAPE, overriding any GROUP selections. This allows for quick monitor mixes of the recorded tracks, via the main outputs.

MIX – This status switches the multitrack (optionally) to Replay. All channel inputs are switched to Line to pick up the multitrack returns and feed them to the Large Faders and then on to the main output busses for remixing. The Small Faders take their input from the GROUP/TAPE selections but now feed the multitrack Routing Matrix, and can be used for additional inputs to the mix. The Routing Matrix allows these faders to feed the multitrack busses or the stereo busses; the SF MIX button, on individual channels, allows Small Fader signals to directly feed the Main mix busses. The Small Faders can also be used as additional stereo or mono auxiliary sends from each channel.

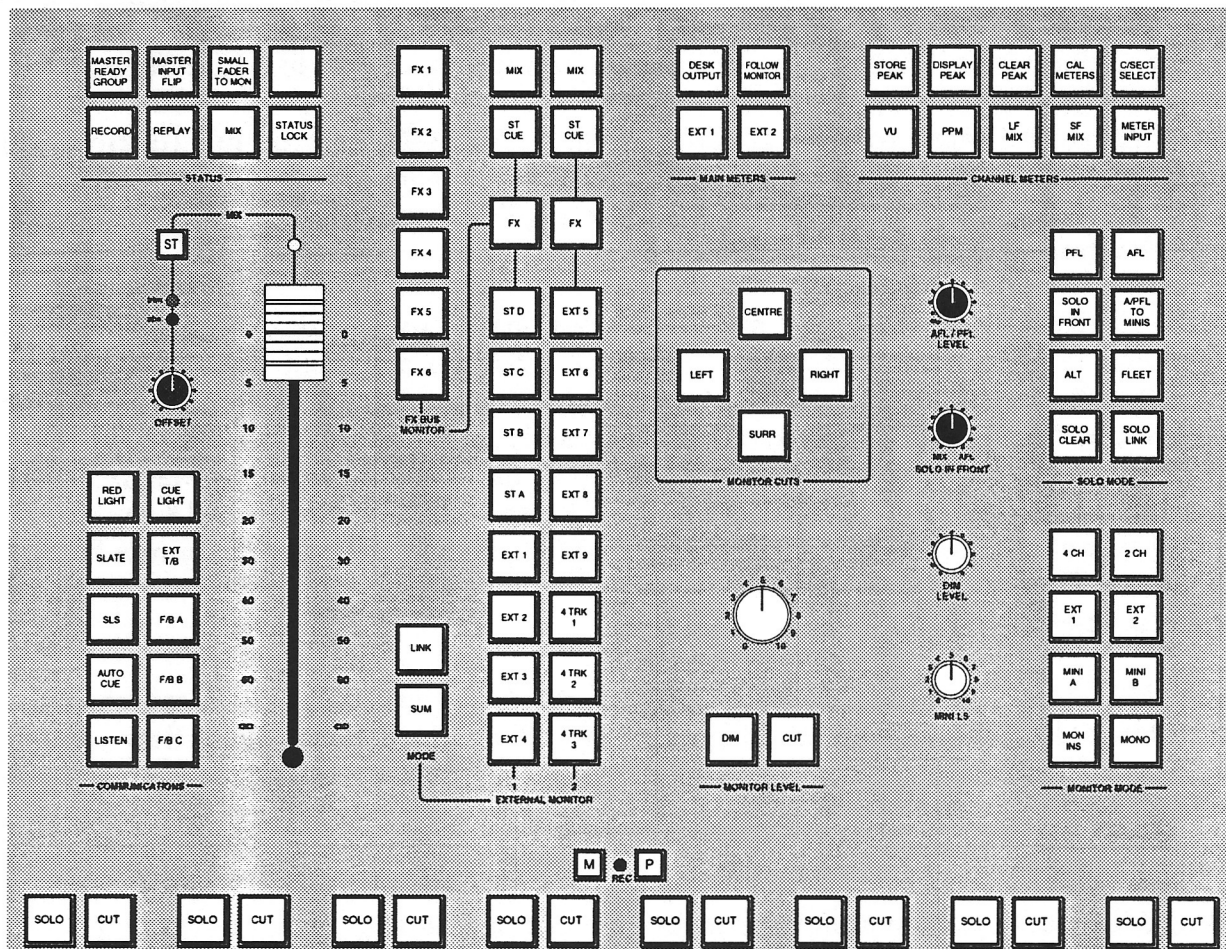
RECORD + MIX – When the RECORD and MIX buttons are pressed together, the multitrack (optionally) switches to Sync replay. All channels behave as if they were in MIX status unless an I/O module's TAPE or GROUP button is pressed, which then makes that particular channel behave as if it were in RECORD status. This is a useful mode for overdubbing tracks.

The additional buttons within this section function as follows:

MASTER INPUT FLIP – Flips all channel inputs between Mic and Line.

SMALL FADER TO MON(ITOR) – In RECORD or REPLAY status, this flips the Small and Large Faders so that the Large Faders feed sources to the Routing Matrix and the Small Faders are used for the monitor mix.

MASTER READY GROUP – Selects all modules to GROUP. This allows you to quickly set up the desk so that the monitor faders and meters are fed from the modules' Group Outputs. It also provides a quick way to check the desk outputs when aligning the multitrack.



STATUS LOCK - For use in broadcast or live applications when changing statuses would cause havoc! It disables the following functions:

- STATUS BUTTON CHANGES:
 - RECORD
 - MIX
 - REPLAY
 - SMALL FADER TO MONITOR
- MASTER INPUT FLIP
- OSCILLATOR ON
- SLATE TALKBACK
- LISTEN MIC TO TAPE
- AUTOCUE
- SOLO IN PLACE
- SLS OUTPUT

- AFL is selected and the RED LIGHT is switched on.

Main Outputs

The rest of the facilities on the SL952/953 modules will be discussed in a logical 'audio' order, starting with the console's main output controls.

Master Fader

The master fader is a four-channel fader controlling the level of the console's Left, Centre, Right and Surround outputs. When the fader is at the top of its travel, the main output VCAs are bypassed by relays, as indicated by a blue LED above the fader. Switching in the Output Compressor, moving the master fader down, or adjusting the associated Offset control (see below), switches the VCAs seamlessly back into circuit.

An automation status switch and LEDs are fitted next to the fader.

Offset control

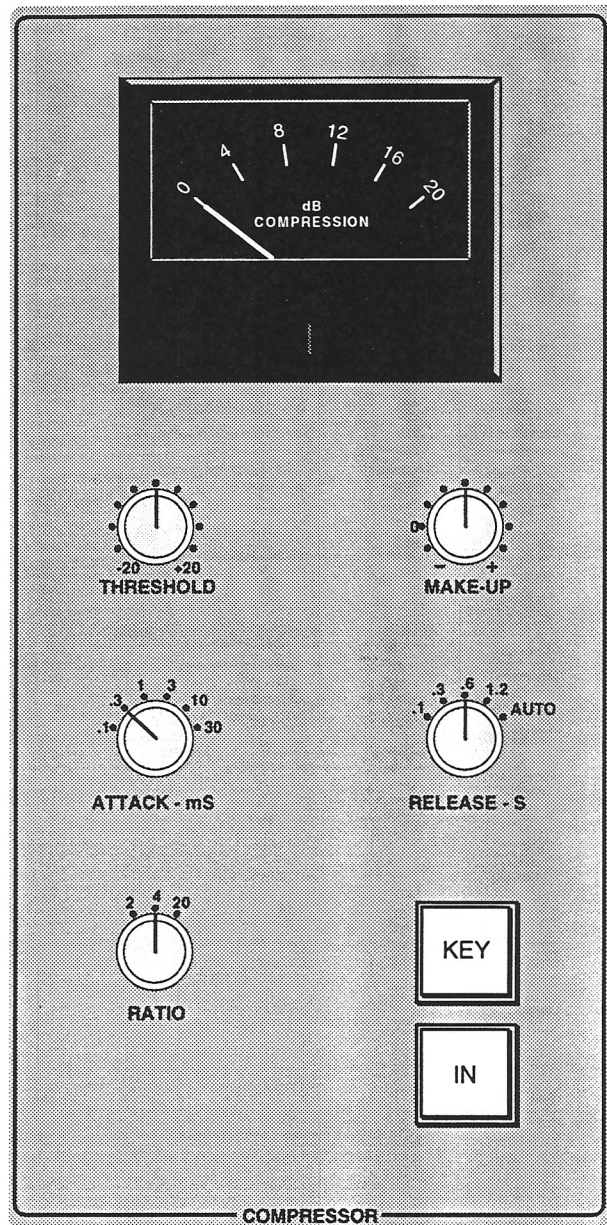
This raises or lowers, by $\pm 20\text{dB}$, the level of the main output VCAs, allowing the master fader to be left at maximum while adjusting the gain of the main outputs.

Output Compressor

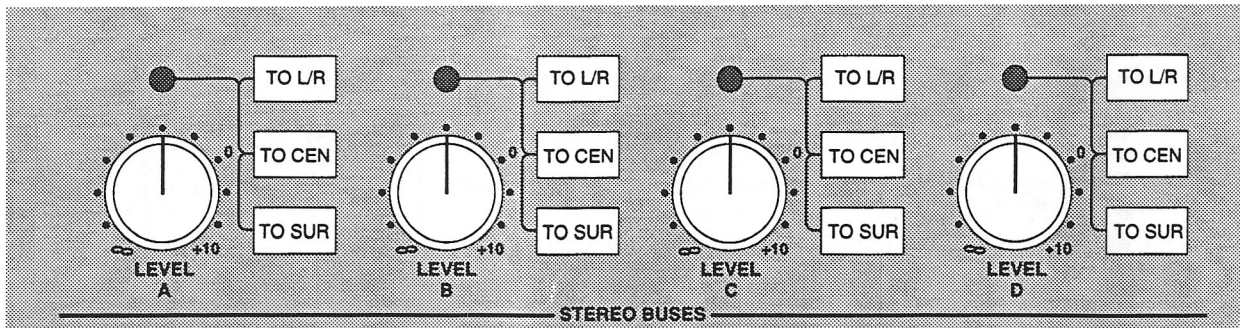
The main output compressor uses the same VCAs as the main fader. Switching the compressor **IN** introduces no additional audio circuitry to the main outputs.

This is a high quality 4-channel compressor with straightforward controls. The gain **MAKE-UP** simply acts as a level control to compensate for the lowered level which is a consequence of compressing the signal. This control may be set so as not to change the overall programme level when the compressor is switched in. The meter indicates dBs of gain reduction.

Insert points (patchrows L&M 1-4) are provided pre the VCAs. The compressor side chain is fed from the insert return. Selecting **KEY** bypasses the insert, allowing the insert return to be used as a key input. All four insert returns are summed to generate one sidechain control voltage, allowing the key input to be triggered by single or multiple signals.



Stereo Bus Master Controls



The level of the console's four stereo busses is set by four rotary controls to the right of the SL953 (see above). The bus outputs are fed to the patch (N 1-8), then normalised to the connector panel *and* to an insert return to the console (P 1-8). The insert return can be monitored via External Source Selector 1 (see Page 5-11) and may also be routed to the main mix busses using the reassign switches next to the level controls. Routing to Left and Right outputs is in stereo. Routing to Centre or Surround is in mono.

This allows the stereo busses to be used as audio subgroups, to generate centre or surround mixes, or to be normalised to an 8-track recorder, outboard effects equipment or foldback feeds.

The insert point enables audio groups to be processed before being mixed back onto the main outputs.

